AVIATION WEEK

A McGRAW-HILL PUBLICATION

JUNE 14, 1948

K·L·M

ROYAL DUTCH AIRLINES

Serving Five Continents

Relies on BG

Spark Plugs

For nearly thirty years, "The Flying Dutchman" has been a familiar figure along the air routes of the world. Today he penetrates five continents and flies 57,000 miles of air lanes. Such growth and success are a great tribute to the pioneers of commercial aviation who started him on his career. Through the years, BG Spark Plugs have been relied on by the "World's Oldest Airline." Here, as for so many other airlines, they provide top efficiency and longest service life.

FOR AIRCRAFT ENGINES... AIRCRAFT SPARK PLUGS

THE BG CORPORATION

NEW YORK 19, N. Y.

SERVING WORLD AVIATION OVER THIRTY YEARS

DETROIT PUB LIBRARY
TECHNOLOGY DEPT
96 PUTNAM AV
DETROIT MICH

Plan now to visit the NATIONAL AIR RACES Cleveland Airport

SEPTEMBER 4, 5 and 6, 1948

EACH YEAR THE GREATEST PUBLIC DEMONSTRATION OF AERONAUTICAL PROGRESS!

Main Contest Events

Saturday, Sept. 4th

BENDIX Transcontinental Speed Dash.

TINNERMAN Trophy Race—International Closed Course Event for Pilots and Planes of any nation.

GOODYEAR Trophy Race—4 heats for planes of 190 cu. in. displacement.

Sunday, Sept. 5th

ALLISON Trophy Race—Jet Speed Dash, Cleveland to Indianapolis and return, for U. S. AIR FORCE Jet Planes.

SOHIO Trophy Race for Handicapped P-38, 51 and 63 planes.

KENDALL Trophy Race—15-mile Closed Course Speed Contest for Women Pilots only.

GOODYEAR Trophy Race—2 semi-final heats to determine starters in the final.

Monday, Sept. 6th

14th ANNUAL THOMPSON TROPHY RACE on LABOR DAY—Traditional Closed-Course, High-Speed Classic of the world.

GOODYEAR Trophy Race—Finals, 8 Fastest Planes of 190 cu. in. displacement, followed by Consolation Race.

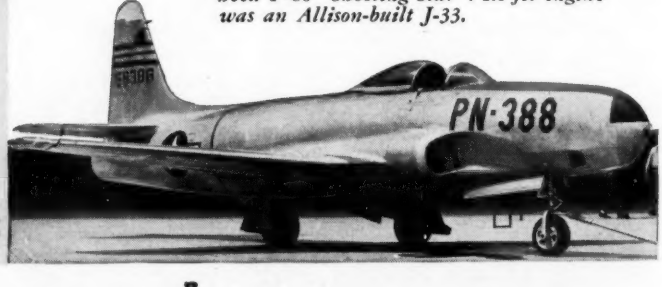
1947 THOMPSON TROPHY RACE WINNERS

Cleland's stripped-down "Corsair" Navy plane was equipped with a 3,500 h.p. 28-cylinder Pratt & Whitney "Wasp Major" engine.

Lieut. Col. Robert L. Petit placed first in the jet division of the 1947 Thompson Trophy race. He averaged 500.70 m.p.h. for eight turns of the 22.5-mile course.

Cook Cleland, World War II Navy ace of Cleveland, won the Thompson Trophy race for piston engines at a new average speed of 396.12 m.p.h. for 20 laps of the 15-mile closed course.

Col. Petit flew this U. S. Air Force Lockheed P-80 "Shooting Star". Its jet engine was an Allison-built J-33.



Thompson Products, Inc.

CLEVELAND • DETROIT • LOS ANGELES • ST. CATHARINES, ONT.

MANUFACTURERS OF PRECISION PARTS FOR AUTOMOTIVE AND AIRCRAFT; SPONSORS OF THE THOMPSON TROPHY RACE

Research keeps
B.F.Goodrich
FIRST IN RUBBER

Rubber lips that laugh at 70° below

Tests of this Pressure-Sealing Zipper door, which B. F. Goodrich developed for a new airplane, showed excellent operation at most temperatures. But when it got down to–70°, the rubber lips that do the sealing job tended to stiffen. And that made the zipper hard to open.

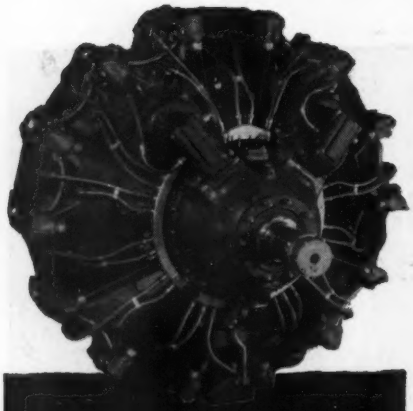
B. F. Goodrich engineers went to work on the problem. They borrowed an idea from another B. F. Goodrich development—electric rubber. By running resistance wires through the core of the rubber lips, enough heat was provided to keep them flexible in extreme cold. Now, temperatures of 70° below—and even lower—hold no threat for the door-sealing lips.

Because these precision-molded lips overlap, and run the entire length of the zipper, Pressure-Sealing Zippers provide a 100% effective seal. They are also light weight. A typical door, which carries a load of 10,000 pounds, weighs only *five* pounds.

Pressure-Sealing Zippers have also proved a successful seal for removable sections of air ducts, for inverter covers, for water-tight protective coverings, and control surface seals. They save space by eliminating the need for bolted parts with gaskets. They operate quickly and easily. They are adaptable to any kind of covering, irregular shapes, and light or heavy requirements.

The work which developed the Pressure-Sealing Zipper, electric rubber, and now heated Zippers, is typical of the B. F. Goodrich research which provides aviation with effective answers to tough problems. *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

B.F.Goodrich
FIRST IN RUBBER



Problems in
AIRCRAFT IGNITION SHIELDING
come easy to
Titeflex engineers

TITEFLEX has devoted years of research to the development of aircraft ignition shielding and related products. For this reason the answer to design problems on aircraft ignition shielding are usually arrived at quickly by the TITEFLEX Engineering Department. When the answer is not immediately available, we undertake the necessary research to arrive at a satisfactory solution.

You can save time—and money—by consulting TITEFLEX on your ignition shielding requirements. No problem is too tough for our engineers and production men to undertake. We would like to prove our unique ability in this specialized field and invite you to write for complete details.

Titeflex, Inc.
810 Frelinghuysen Ave., Newark 5, N.J.
Exclusive Manufacturers of Titeflex high quality products for more than 30 years
Sales Offices { CHICAGO CLEVELAND DETROIT PHILADELPHIA LOS ANGELES BOSTON SAN FRANCISCO TORONTO

Vol. 48 No. 24

AVIATION WEEK

June 14, 1948

Sidelights	7	Engineering-Production	20
News Digest	8	New Products	34
Headline News	11	Sales & Service	37
Aviation Calendar	16	Briefing for Dealers	39
Industry Observer	16	Financial	41
Letters	17	Transport	42
World News	19	Editorial	54

Robert H. Wood
EDITOR

Merlin H. Mickel
MANAGING EDITOR

Robert B. Hotz.....News Editor
Irving Stone.....Technical Editor
William Kroger.....Manufacturing
Alexander McSurely.....Sales & Service
Charles L. Adams.....Transport Editor
Robert McLarren.....Engineering
Katherine Johnsen.....Congress
Stanley L. Colbert.....Production Editor
Marie Adams.....Editorial Assistant
Anita Scaffo.....Editorial Assistant
Margaret Timmerman...Editorial Assistant
Victoria Giaculli.....Editorial Makeup
Scholer Bangs.....Pacific Coast Editor

Executive and Editorial Offices: 330 W. 42nd St., New York 18, N. Y., Phone Longacre 4-3000; National Press Bldg., Washington 4, D. C., Phone National 3414.

Domestic News Bureau: Atlanta 3, Rhodes-Haverty Bldg.; Chicago 11, 520 N. Michigan Ave.; Cleveland 15, Hanna Bldg.; Detroit 26, Penobscot Bldg.; Los Angeles 14, 621 S. Hope St.; San Francisco 4, 68 Post St.; Houston, 514 South St. *Correspondents:* Boston, Buffalo, Dallas, Dayton, Denver, Indianapolis, Jacksonville, Kansas City, Knoxville, Lansing, Louisville, Memphis, Miami, Milwaukee, New Orleans, Oklahoma City, Ogden, Philadelphia, Phoenix, Pittsburgh, Portland (Ore.), St. Louis, Salt Lake City, Seattle, Wichita, and 43 other cities.

Foreign News Bureau: London, Paris, Berlin, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Buenos Aires. Correspondents in Athens, Caracas, Santiago, Shanghai, Zurich, Rome, Johannesburg and over 40 other cities.

ECONOMIC STAFF
Dexter M. Keezer, Sanford S. Parker, William F. Butler, Robert P. Ulin

Robert F. Boger
PUBLISHER

J. G. Johnson, *Business Manager;* R. W. Martin, Jr., *Sales Manager;* Sales Representatives: J. C. Anthony, New York; M. J. Storz, Philadelphia; V. K. Dissette, Cleveland; L. J. Biel, Chicago; W. G. Ashmore, Atlanta; J. W. Otterson, San Francisco; C. F. McReynolds, Los Angeles. Other sales offices in Pittsburgh, Detroit, St. Louis, Boston and London.

Member of Associated Business Papers, Inc., and the Audit Bureau of Circulations

McGRAW-HILL PUBLISHING CO., Inc., James H. McGraw (1860-1948), Founder. Publishing Office, 99-129 N. Broadway, Albany, N. Y. Return postage guaranteed. Editorial and executive offices: 330 W. 42nd St., New York 18; 520 N. Michigan Ave., Chicago 11; 68 Post St., San Francisco 4; Aldwych House, London, W.C. 2; National Press Bldg., Washington 4, D. C.; Architects Bldg., 17th & Sansome Sts., Philadelphia 3; Hanna Bldg., Cleveland 15; 2980 Penobscot Bldg., Detroit 26; Continental Bldg., St. Louis 8; 1427 Statler Bldg., Boston 16; Rhodes-Haverty Bldg., Atlanta 3; 621 South Hope St., Los Angeles 14; 738-9 Oliver Bldg., Pittsburgh 22. JAMES H. McGRAW, Jr., President; CURTIS W. McGRAW, Vice-President and Treasurer; EUGENE DUFFIELD, Executive Assistant for Publications; NELSON BOND, Director of Advertising; JOSEPH A. GERARDI, Secretary; J. F. BLACKBURN, Jr., Director of Circulation . . . Aviation Week, 330 W. 42nd St., New York 18. Published weekly, price 50¢ a copy, 50¢ in Canada. Allow at least ten days for change of address. Address all communications about subscriptions to Director of Circulation, 330 W. 42nd St., New York 18, N. Y. Subscription rates—United States and possessions, $5 a year, $8 for 2 yr., $10 for 3 yr. Canada, $6 for 1 yr., $10 for 2 yr., $12 for 3 yr., payable in Canadian currency at par. Pan American countries, $10 for one yr., $16 for 2 yr., $20 for 3 yr. All other countries, $20 for 1 yr., $30 for 2 yr., $40 for 3 yr. Please indicate position and company connection on all subscription orders. Entered as second class matter July 16, 1947, at Post Office, Albany, N. Y., under Act of March 3, 1879. Volume 48, Number 24. Printed in U.S.A. Cable address "McGraw-Hill New York". Member A.B.C. Copyright 1948, McGraw-Hill Publishing Co. Aviation Week is indexed in "Reader's Guide to Periodical Literature" and in "Industrial Arts Index." Following publications are combined with AVIATION WEEK: AVIATION, AVIATION NEWS, AIR TRANSPORT, AERONAUTICAL ENGINEERING and AIRCRAFT JOURNAL. All rights to these names are reserved by McGraw-Hill Publishing Co.

Stamp of Approval!

When some of America's major airlines use certain products, you, too, can buy the same products . . . with *confidence!*

Ever increasing amounts of Phillips 66 Aviation Products are being used by important airlines and key airports throughout the West and Mid-West. Yes! Phillips 66 Aviation gasoline and lubricants have passed the test of successful performance . . . of dependability and reliability!

When you choose aviation products, you will do well to be guided by the choice of experts in the field of aviation. Buy Phillips 66 Aviation Products . . . products which bear the all-important stamp of approval!

The Aviation Department
Phillips Petroleum Company
Bartlesville, Oklahoma

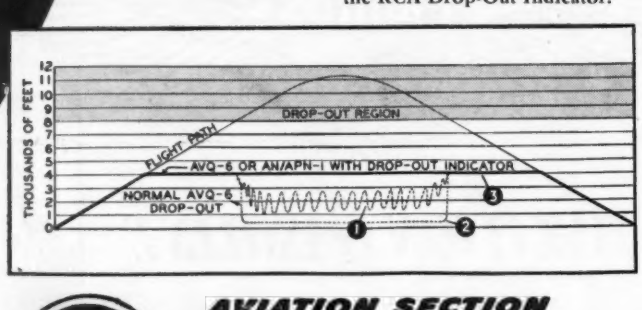
Phillips 66

AVIATION GASOLINE

Now—

Positive drop-out indication and "Fail-Safe" warning . . .

Altitude chart showing behavior of radar altimeter indicator-meters with respect to flight path of the airplane. For the purpose of illustration, drop-out point is shown at 8000 feet. Curves illustrate: (1) the wild fluctuations which characterize the AN/APN-1 in the drop-out region; (2) the practically complete normal drop-out of the AVQ-6; and (3) the action of the AVQ-6 or the AN/APN-1 with the RCA Drop-Out Indicator.



. . . for the RCA Low-Altitude Radar Altimeter

Type AVQ-6

The new DROP-OUT INDICATOR, Type AVA-133, can be added to old or new equipments

Used with any AVQ-6 or AN/APN-1 altimeter, this unique circuit device eliminates *positively* all ambiguous readings at all drop-out altitudes.

How It Operates

At the higher altitudes—where the terrain-reflected signals become too weak to operate your altimeter—the AVA-133 "takes control"... holding the indicator needle steady at 4000 feet, and warning you by flag alarm, light, or other convenient means that your altimeter is "dropped out." This action continues until you descend to the altitude where the reflected signal is again adequate for altimeter operation. At that point the Drop-Out Indicator relinquishes control—and your altimeter functions normally.

The "Fail-Safe" Feature

"Drop-out" action also occurs on altimeter failure. Thus, for instance, at any altitude below drop-out, a circuit failure within the altimeter will cause the AVA-133 to function and operate the warning signals . . . an important feature that adds immeasurably to the operating value of radar altimeters.

Available as a single unit in kit form, with full instructions, the Drop-Out Indicator can readily be installed by your skilled technician . . . or by us if you wish.

For complete information on the AVA-133, just send a note to Dept. 9-F.

AVIATION SECTION

RADIO CORPORATION of AMERICA

ENGINEERING PRODUCTS DEPARTMENT, CAMDEN, N.J.

In Canada: RCA VICTOR Company Limited, Montreal

NEWS SIDELIGHTS

Prototype Problems

Engineers are expecting one of the most protracted wrangles in design room history when the Air Force-CAB-CAA prototype transport technical committee get down to the enervating job of actually preparing detail specifications.

With wartime design conferences between airframe and contractor engineers still fresh in their minds, technical observers are standing by for negotiations to stretch into months and perhaps a year before a firm contract specification is actually circulated. There are certain to be three or four separate plane types involved.

Most favored negotiation method is the familiar circular proposal and invitation for bids approach to the problem which enables the airframe manufacturer to produce an integrated design featuring his own combination of features.

Postal Action Deferred

Congress will pass the problem of airline mail pay subsidies and air mail postal rates onto the next session. Chairman Edward Rees (R., Kans.) of the House Post Office and Civil Service Committee has abandoned efforts to push through two key proposals. One measure would direct a separation of "service" and "subsidy" payments to air carriers for mail service, with subsidies coming from direct appropriations to CAB. The other would establish a three-member rate-fixing board in the Post Office Department to draw up a schedule of postal rates sufficient to meet department operating expenses each year. Unless vetoed by Congress within 60 days after its submission in January, the schedule would become effective. Both proposals are vigorously opposed by Air Transport Association. A safe bet for re-election, Rees plans to start up action on the measures as soon as the new Congress convenes next year.

Air Minded Congress

Oldtimers are astonished at the revolution in legislation that the postwar Congresses have wrought in aviation. Some think its good, others see in it a damaging sign.

The Congress of a quarter-century ago would not have dreamed of bills to order or permit the Air Corps to develop a certain type facility, buy a particular kind of airplane or engage in a specific type facility: that was the Air Corps' and Naval Aviation's business; not Congress'.

In those days Congress appropriated sums of money as justified by hearings and let it go at that. Today, Congress thinks nothing of debating bills establishing radar networks, building new research centers, authorizing the design of prototype aircraft, etc.

Yesterday, a patrol plane was some sort of Navy plane to a Congressman; today he talks about the Lockheed P2V with obvious detailed knowledge.

Good or bad, Congress has put itself down deep into the details of the aviation business and with the pursestrings in one hand there is none to deny it aviation manipulations with the other.

Forrestal vs. USAF

New evidence of the broadening rift between Defense Secretary James Forrestal and Air Secretary Stuart Symington over national defense policy broke through the surface last week.

Spokesmen for Forrestal's office told reporters USAF had used "the back door approach" to get three major proposals introduced in Congress: Authorization for a $1,000,000,000 air engineering research center; authorization for a joint long-range guided missile proving ground, operated by USAF; and authorization for a $164,000,000 radar warning network.

Chairman Chan Gurney (R., S. Dak.) of Senate Armed Services Committee introduced the bills. Budget Bureau had blocked the measure, on Forrestal's advice, preventing their orthodox submission to Congress as administration unofficial proposals. USAF sources alleged Forrestal was "dragging his feet" on these measures.

Hinshaw Wins

Rep. Carl Hinshaw (R., Calif.), one of aviation's best friends on Capitol Hill, is set to continue service in the next Congress. Hinshaw, who served as vice chairman of the Congressional Aviation Policy Board and is second-ranking member of House Interstate and Foreign Commerce Committee, won both the Republican and Democratic nominations in his district of California's recent primary.

Two other men who have actively promoted civilian aviation on Capitol Hill will leave Congress at year's end.

Rep. Clarence Lea (D., Calif.), chairman of House Interstate and Foreign Commerce Committee for over a decade, is retiring.

Rep. Richard Harless (D., Ariz.), with six years' service on the Interstate and Foreign Commerce Committee, will seek the gubernatorial nomination in Arizona's Sept. 7 primary.

An Old Story

USAF-Navy row is approaching a new pitch of intensity. Despite Defense Secretary Forrestal's order forbidding public inter-service rows the Navy has been pushing an offensive aimed at minimizing the effectiveness of land-based aviation and extolling the virtues of carrier-based planes.

When Air Force objections killed all references to comparison of carrier vs land-based planes in Navy Pacific air combat statistics, the deleted items were used in a Buffalo Evening News story written by a Naval Reserve officer under a nom de plume. Copies of the story were then mimeographed at Navy headquarters in Washington for distribution.

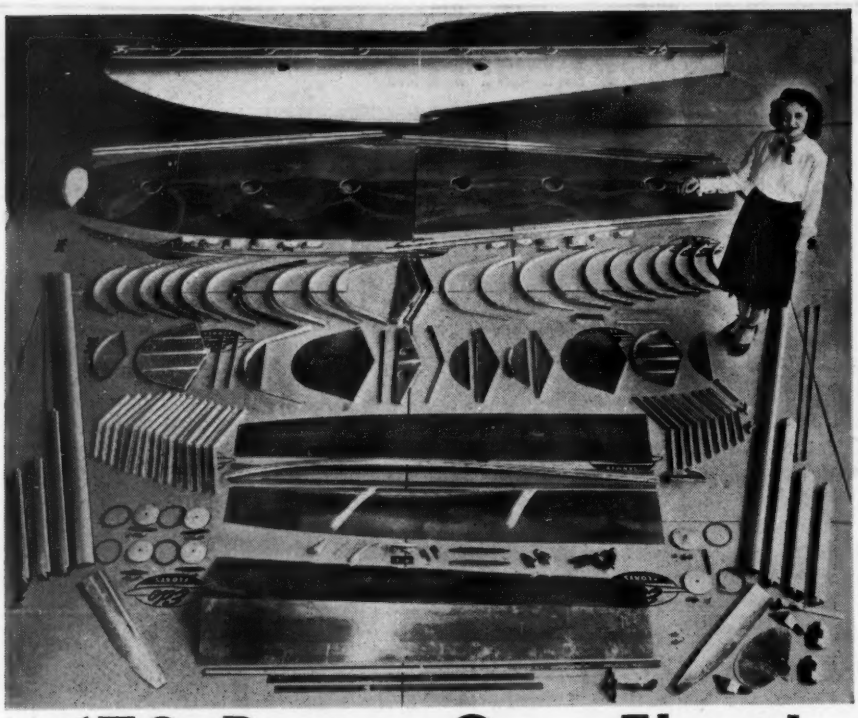
Latest blast at the Air Force was delivered by retired Admiral Ernest J. King former chief of naval operations, on the sixth anniversary of the battle of Midway.

King went out of his way to point out that a small force of AAF B-17s engaged in this action failed to score hits on the enemy fleet while Navy planes from three carriers inflicted major damage on enemy ships. Navy tactics are to have retired admirals, not subject to Forrestal's jurisdiction, deliver the public blasts against the Air Force.

When Col. Hugh Knerr, retired Air Force leader, attempted a similar role in pre-war years to fight for air power War Department recalled him to active duty to silence him.

Crowded Cockpits?

The airlines are still jittery over CAB's order requiring use of a flight engineer in DC-6s, Boeing Stratocruisers and possibly some DC-4s operating under certain conditions. Milton W. Arnold, ATA's vice president-operations, has personally discussed the principal problems involved with CAB Chairman Joseph O'Connell. The carriers remain in the dark on how CAA and CAB will interpret the new regulation. One gimmick is the provision that the third crew member shall be required "solely" as a flight engineer on all aircraft certificated for more than 80,000 lb. maximum takeoff weight. Airline officials believe use of the word "solely" will foster jurisdictional union disputes.



179 Parts = One Float!

THIS is what it takes to build *one* Edo all-metal lightplane float, — 179 individual parts, castings, metal sheets, reinforcing members and several thousand rivets to put them together. For a complete set of floats, double this and add struts and wires for installation. Little wonder that float equipment seems high priced.

Floats are a complicated compromise. They must combine the best hydrodynamic as well as aerodynamic characteristics; they must be incredibly strong yet extremely light; and they *must be water-tight.* This calls for expensive precision tooling and precision manufacturing.

In the 22 years during which Edo has built better all-metal floats, the whole aviation world has looked to Edo for the best in float equipment. One set of Edo floats has had over two decades of daily use; it is not uncommon to find others with over 15 years of constant use.

Edo has constantly striven to reduce the cost of floats but has steadfastly refused to compromise strength and lasting quality for price.

In addition to building floats, the Edo Corporation's expanded facilities are more and more being relied on by many diversified industries for the construction of precision aluminum components. And EDO's electronics division is pioneering a number of developments of untold importance in this field.

EDO

Edo FLOATS

CORPORATION, College Point, N. Y.

CONTRACTORS TO U. S. ARMY, NAVY AND AIR FORCE

NEWS DIGEST

DOMESTIC

An injunction to compel Boeing Airplane Co. to bargain with the striking Aeronautical Mechanics Union was under consideration by top government labor officials in Washington.

LaMotte T. Cohu was elected president, general manager and a director of Consolidated Vultee Aircraft Corp. Floyd B. Odlum, board chairman, has been interim president since Harry Woodhead moved up to take the vice chairmanship several weeks ago.

Curtiss-Wright Corp.'s disputed annual election case has been taken under advisement by Chancellor W. W. Harrington following oral argument in Wilmington Chancery Court. A stockholders' group seeks to oust the present management.

Boeing Airplane Co. has delivered to the Air Force five B-50s that left the plant before the strike. Four more tentatively are set for delivery in the next several months.

FINANCIAL

Pan American Airways Corp. declared dividend of 25 cents per share payable June 21, 1948, to holders of record June 11.

Continental Motors Corp. showed net profit for six months ended Apr. 30 of $1,724,411 or 57 cents a share on sales totaling $57,054,547. Net working capital was $19,830,210.

Celanese Corp. of America declared dividend of 60 cents per share on common stock payable June 30, 1948, to holders of record June 14. Company's Canadian subsidiary voted a dividend of 75 cents per share for the second quarter of 1948.

FOREIGN

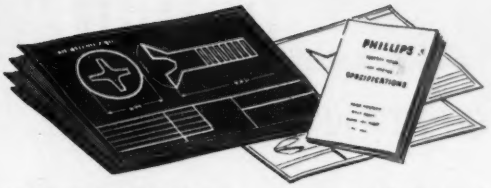
British purchase of more U. S. transport planes (AVIATION WEEK, June 7) was reported last week to be nearing approval by Sir Stafford Cripps, Chancellor of the Exchequer.

Lord Nathan, British Minister of Civil Aviation, resigned and was succeeded by Lord Pakenham. Packenham, like Nathan, has little experience in the aviation industry.

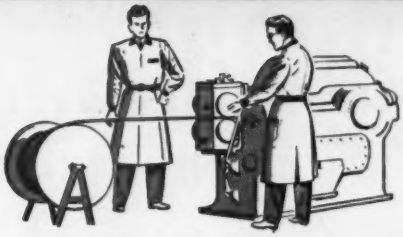
Transportes Aereos Portugueses (TAP) is planning an air service to the Union of South Africa using Douglas DC-4 transports following an agreement with South African Airways. TAP is currently operating four DC-4s with more on order. The new service will be built up to a once-a-week service, the trip from Lisbon to Johannesburg taking three days.

ONLY PHILLIPS RECESSED HEAD SCREWS

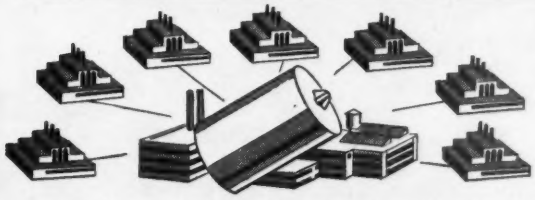
OFFER DIMENSIONAL UNIFORMITY INSURED BY CLOSE ENGINEERING CONTROL



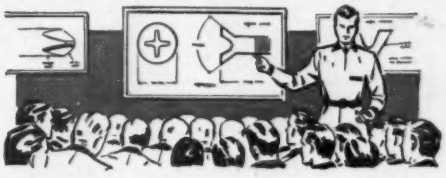
ESTABLISHED STANDARDS . . . Every manufacturer of Phillips Cross Recessed Head Screws is supplied with complete engineering and production data which prescribes precise dimensions and tolerances.



CENTRALIZED PRODUCTION TRAINING . . . And, before production is started on Phillips Screws, each plants' supervisory staff puts in an extended training period with Phillips engineers.



COMMON SOURCE OF RECESS FORMING TOOLS . . . Punches for forming the Phillips Cross Recess in all types and sizes of Phillips Screws are formed from master types at one plant. The manufacture of gauges for maintaining uniformity of Phillips Drivers and Bits are similarly centralized.



ENGINEERS' MEETINGS . . . Standards carefully established at the very beginning are rigorously maintained through meetings of "Phillips Recessed Head Standards Committee". Engineers from all plants meet to exchange ideas, discuss problems and learn about recent developments.

All these precautions to secure absolute dimensional uniformity are just part of the care taken to produce Phillips Cross Recessed Head Screws that give users *all* the advantage of a cross recess engineered for practical production.

Speed and ease of driving in production assembly demands that the driver and recess fit smoothly, perfectly, the same way every time, all the time. With Phillips Screws, you can depend on it.

GET ALL THE ADVANTAGES OF ASSEMBLY WITH CROSS RECESSED HEAD SCREWS . . .

GET PHILLIPS *Recessed Head* SCREWS

Wood Screws · Machine Screws · Self-tapping Screws · Stove Bolts

25 SOURCES

American Screw Co.
Central Screw Co.
Continental Screw Co.
Corbin Screw Div. of American Hdwe. Corp.
Elco Tool & Screw Corp.
The H. M. Harper Co.
Lamson & Sessions Co.
Milford Rivet and Machine Co.
National Lock Co.
National Screw & Mfg. Co.
New England Screw Co.
Parker-Kalon Corporation
Pawtucket Screw Co.
Pheoll Manufacturing Co.
Reading Screw Co.
Russell Burdsall & Ward Bolt & Nut Co.
Scovill Manufacturing Co.
Seaboard Screw Corp.
Shakeproof Inc.
The Southington Hardware Mfg. Co.
The Steel Company of Canada, Ltd.
Sterling Bolt Co.
Stronghold Screw Products, Inc.
Wales-Beech Corp.
Wolverine Bolt Company

GET THIS NEW BOOKLET of facts that prove the top value, top economy of Phillips Recessed Head Screws. It's free . . . use the coupon.

AW-29

Phillips Screw Mfrs.,
c/o Horton-Noyes Co.
1800 Industrial Trust Bldg.
Providence, R. I.

Send me the new booklet—"How to Select Recessed Head Screws for Practical Production Driving".

Name _____

Company _____

Address _____

Get the same skilled service at this famous Aviation sign

CITIES SERVICE

The Cities Service Aviation Products sign is fast becoming one of the best known and the best respected in aviation circles. And here are the reasons: the wide range of aviation petroleum products are all of finest quality. The expert aviation services offered at the Cities Service sign are thorough, efficient and highly skilled. And backing up these products and services is sound "aviation-minded research."

No wonder more and more alert airports are hanging out the popular emblem of Cities Service Aviation Products.

Cities Service Aviation Gasolenes
Cities Service Koolmotor and Cities Service Aero Motor Oils
Cities Service Cisco Solvent engine cleaner
Cities Service Aero Greases and aviation specialty lubricants

CITIES SERVICE

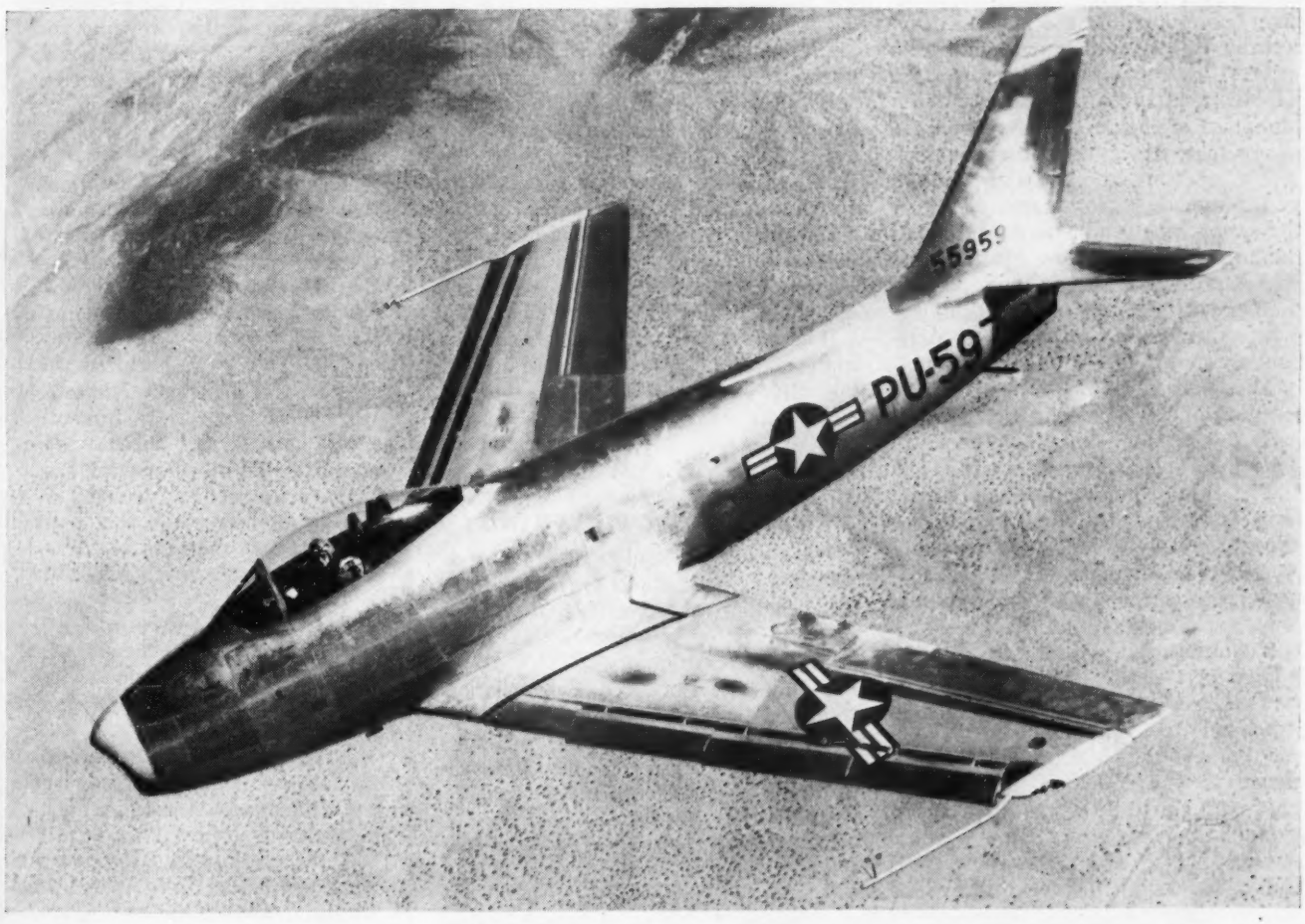
AVIATION PRODUCTS

New York • Chicago • In the South: Arkansas Fuel Oil Co.

Vol. 48, No. 24

AVIATION WEEK

June 14, 1948



XF-86 Flies Faster Than Sound

By Robert McLarren

North American's XF-86 has flown faster than the speed of sound. The F-86A, now being manufactured, will be the first supersonic combat aircraft, and the first supersonic plane to go into quantity production.

The Bell XS-1 was the first aircraft to fly faster than sound. It attained Mach number 1.0 (sonic speed) on Oct. 14, 1947 (AVIATION WEEK, Dec. 22), and since has flown faster.

Both are U. S. Air Force planes.

The F-86A now is being manufactured in quantity at North American Aviation, Inc.'s, main plant at Los Angeles Municipal Airport, Inglewood, Calif. Initial order for 225 is expected to be increased substantially under the 1949 procurement program.

► **Test Program**—The XF-86 first flew at the speed of sound in a dive as part of a second series of performance tests (Phase II). The XS-1 made its initial supersonic flights in a steep climb. From the standpoint of sonic airflow, the action of the wing is the same aerodynamically whether in a dive, climb or level flight.

The supersonic performance of the XF-86 was attained with the standard GE-Allison J-35 (TG-180) axial-flow turbojet engine developing 4600 lb. static thrust.

The two prototype XF-86s are being fitted with the more powerful General Electric J-47 (TG-190) axial-flow turbojet engine rated at 5000 lb. static thrust and capable of more than 6000 lb. thrust (the power of the XS-1 rocket engine) through the use of water injection.

This 30 percent increase in available thrust will push the F-86A well into supersonic speeds at least comparable to the performance of the XS-1.

However, the XS-1 is a special rocket-powered research airplane which has a powered flight duration of only two and one-half minutes, while the F-86A will have an endurance at top speed of one hour and a range at reduced speed of 1800 miles.

► **Carries Armament** — The craft is armed with six .50 caliber machine guns (AVIATION WEEK, Oct. 6, 1947) and carries a variety of aircraft rockets, several light bombs or two 1000 lb. bombs, additional machine gun packages, or jettisonable fuel tanks.

These tanks, unlike those on other jet fighters, may be located at the fuselage rather than at the wing tips

due to the wing sweep. Wingtip tanks on swept wings create adverse stability effects due to their location well aft of the plane's center of gravity.

▶ **Uses Swept Wing**—Key to the supersonic performance of the new fighter is its swept wing, which reduces by one-third the drag rise as sonic speed is approached. Wing sweep allows the airflow over the wing chordwise to remain subsonic while the airplane itself actually is flying at supersonic speed.

This phenomenon permits the XF-86 to attain sonic speed without formation of the shock waves over the wings that create difficulties at high speed for conventional wing aircraft.

Attainment of supersonic speed by the swept wing XF-86 now places past the sonic threshold two of the three basic transsonic speed configurations proposed by research engineers of the National Advisory Committee for Aeronautics.

The Bell XS-1 wing featured extreme thinness (8 percent thick in comparison with the chord length) in its wing and tail to achieve sonic speed.

The third configuration, low aspect ratio, is used on the Douglas D-558-I, already holder of the world's speed record. The Douglas D-558-II Skyrocket utilizes both a swept wing and low aspect ratio in its attempt to attain sonic speed.

▶ **Dive Tests**—Dive tests of the XF-86 were carried out by veteran North American test pilot George Welch; Air Force Maj. K. O. Chilstrom, assigned to the XF-86 as project test pilot by flight test branch, Air Materiel Command, Wright Field, and by other service pilots at Muroc Air Force Base, Calif., site of the historic Bell XS-1 achievement.

The Air Force already has stated officially that the speed of the XF-86 is "over 650 miles per hour," which makes it the fastest turbojet-powered aircraft in the world, surpassing the world speed record of 650.8 mph. held by the Douglas D-558-I Skystreak.

Despite previous publicity in various news stories and aviation books, the XF-86 performance was the first sonic dive speed ever attained. It exceeds by a comfortable margin the wartime performance of fighter planes in special dive tests to examine compressibility difficulties.

▶ **Hough's 525 Mph.** — Col. Cass Hough, wartime 8th Air Force test pilot, told AVIATION WEEK a few days ago that the highest speed he attained during his famed dives in England during August and September, 1942, was 525 mph. in a dive from 31,000 ft. He flew a P-38.

Hough also revealed to AVIATION WEEK that press reports over a year later attributed speeds to his performance far in excess of actual attainment. Some of these, which referred to supersonic speed, Hough terms "fantastic."

Col. Benjamin S. Kelsey also told AVIATION WEEK that his widely publicised P-38 dive at Burbank, Calif., in April, 1943, from which he escaped by parachute after the plane lost its empennage, reached a speed of only about 600 mph.

Former Curtiss test pilot H. Lloyd Child, now assistant to the Administrator of Civil Aeronautics, informed AVIATION WEEK that he reached a maximum speed of about 600 mph. Jan. 24, 1939, in a Curtiss Hawk 75 that was being tested for the French air force.

A speed of about 600 mph. is reported also by Col. George E. Price, Wright Field test pilot, in a Bell P-39 Airacobra Feb. 1, 1940.

The speed of sound varies from 760 mph. at sea level to 675 mph. at 30,000 ft.

Air Force Awards Transport Contracts

Air Force has completed its obligation of fiscal 1948 funds for the procurement of transport aircraft by the award of contracts for 38 airplanes. The new military transport orders:

▶ **C-121**—Ten Lockheed Constellation transports of which nine are cargo versions and one a "special mission" type designed for use by the Secretary of Air Force and other high-ranking passengers.

▶ **C-122**—Two powered versions of the Chase glider for service test. The Wright Cyclone engines will be quick-detachable to provide combination glider-powered plane versatility to the craft.

▶ **C-123**—An experimental powered version of a large Chase glider, prototype of which is not yet complete. This larger model will be powered by Pratt & Whitney double Wasp engines.

▶ **C-124**—Two extensively modified Douglas C-74 Globemaster cargo planes with increased power, strengthened wings, cockpit redesign and various internal modifications. As a part of the Globemaster program, existing C-74 planes will be returned to the factory for these modifications. The improved power plants, Pratt & Whitney Wasp Major Model C engines of 3500 hp., were previously installed in the planes during modifications at the Douglas plant last year.

▶ **C-125**—Improved Northrop "Pioneer" tri-motor transports, the C-125 "Raider" version will have a square fuselage with increased cargo stowage area, redesigned tail and new loading hatch. Two versions have been ordered, 10 rescue types and 13 assault transport versions.

Jet Wing Crash

Destruction of the Northrop YB-49 Flying Wing eight-jet bomber in a desert crash ending a routine test flight from Muroc Air Force Base, Calif., is not expected to interrupt the development of the all-wing type. A high-speed reconnaissance version in which fuel cells replace bombs in the spacious bomb bays and cruising speed is maintained on only four engines is being studied for Air Force procurement.

This combination of additional fuel and reduced engine power would provide long-range characteristics comparable to those of the Hughes XF-11, Republic XF-12 and modified Boeing's B-29's.

The YB-49 crash occurred after an Air Force flight crew had taken the 100-ton craft aloft on a routine Phase II test flight. After about one hour of flight the huge bomber exploded and plunged several hundred feet into the desert. The five-man crew, three officers and two Air Force civilians, was killed.

Rescue workers were unable to approach the blazing wreck. Investigation is now under way by officers of the Air Force Office of Flying Safety.

Possible causes of the explosion virtually rule out stability or control difficulties. A turbine explosion, electrical short in the vicinity of the fuel tanks and ignition of combustible fuel vapors have been advanced as possible causes. No difficulty with the airplane during the flight had been reported to the Muroc tower prior to the crash.

Republic Stock Option Filed With SEC

Republic Aviation Corp., Babylon, N. Y., filed a registration statement with the SEC covering 42,000 of $1 par value common stock, issuable upon the exercise of stock options.

Options for this stock exercisable at $7.25 a share, are held by eight individuals and the estate of another now deceased. The stock was optioned to company employes in December, 1944, for the purpose of creating an incentive to remain in the employ of the company and not as compensation for services performed or to be performed.

Originally, 113,000 shares were optioned among 16 employes, but many of such options have since expired, according to their terms.

Air Force Operational Funds Cut

House votes sums too small to maintain 66 groups, but joins Senate to urge eventual 70-Group force.

Congress continued its clamor for eventual buildup to a 70-Group Air Force last week, but voted USAF operational funds insufficient to support a 66-Group program for the next fiscal year.

The $6,509,939,000 fiscal 1949 military appropriation bill hurriedly passed by the House contained $891,736,000 for USAF operating and maintenance expenses, education and training, and research and development—$26,384,000 below the Budget Bureau Request. Appropriations leaders who steered the measure through the house observed: "As presented. . . . it is represented that with the funds requested. . . . it will be possible to provide for the attainment of a 66-Group Air Force by the end of fiscal year 1949." But USAF spokesmen made it clear to friends on Capitol Hill that it would not. Even the full $918,120,000 asked by the Budget Bureau was well below USAF's estimated needs to support a 66-Group program over the coming year, they said.

▶ **USAF Strength Set**—The measure passed by the House contemplates a USAF average military personnel strength during the coming year of 416,084 and the attainment of a strength of 444,500 by June, 1949. This compares with a present strength of 392,500, and the 502,000 strength needed to support a 70-Group program.

Meanwhile, overlooking its own ax-swinging, Congress re-acclaimed its support for a 70-Group program in two developments:

• House Speaker Joe Martin threatened to establish a Congressional "watchdog" committee to see to it that the administration does not nullify Congress' mandate for USAF procurement on a 70-Group scale by refusing to expend appropriated funds. The $2,295,100,000 voted earlier by Congress for 1949 fiscal year procurement was $822,000,000 more than the administration-requested $1,473,100,000, contemplating a 66-Group program. The President and Defense Secretary Forrestal have authorized USAF to spend only $1,345,165,000 for new planes.

• House Armed Services Committee approved legislation authorizing a fully-implemented 70-Group Air Force. A companion measure was proposed in the Senate by Sen. Styles Bridges (R., N. H.), Sen. Homer Capehart (R., Ind.), Sen. William Knowland (R., Calif.), and Sen. Lister Hill (D., Ala.). The Legislation would authorize: (1) 70 regular USAF groups and 22 separate USAF squadrons, supplemented "by such . . . reserve components . . . as may be required," including 27 Air National Guard groups, 34 Air Reserve groups, and their auxiliary units;

(2) a total active duty USAF strength of 502,000, including 70,500 officers, 4800 warrant officers, and 426,700 enlisted personnel, plus "such civilian personnel as may be deemed necessary. . . .";

(3) a serviceable aircraft strength of either 24,000, or 225,000 airframe tons aggregate;

(4) annual USAF procurement—within the authorized strength—of either 5200 planes, or 85,000,000 airframe lb.;

(5) procurement of spares, parts, equipment, facilities, and other requirements "necessary for maintenance and operation. . .";

(6) a program "to intensify" research and development on aircraft and guided missiles. The authorization, however, means little unless followed up with appropriations.

The $918,120,000 requested by the Budget Bureau for USAF operations over the coming year contemplated $909,486,000 for general expenses ($225,000,000 for research and development, $700,516,000 for operating and maintenance, and $5,970,000 for education and training), $5,734,000 for the Office of the Chief of Staff, and $900,000 for the Office of the Secretary for Air.

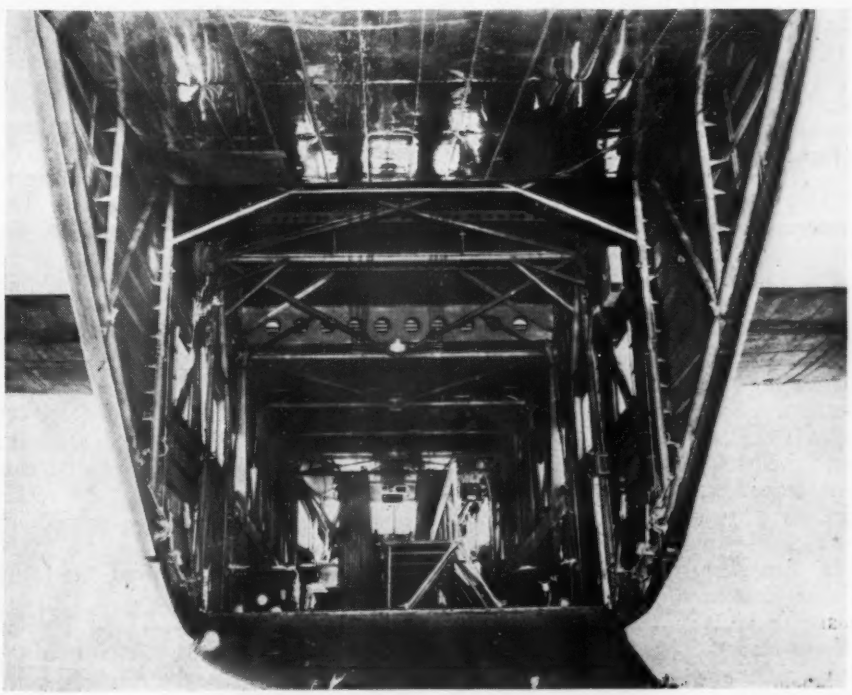
The House applied its $26,384,000 cut, as follows:

• General expenses, $25,000,000. This will reduce USAF's planned employment of 137,156 civilians by 11,500. No part of the cut, however, can be applied to research and development.

• The $884,486,000 approved by the House for general expenses will provide $103,000,000 for maintenance materiel for aircraft; $155,827,000 for aircraft fuels; $45,047,000 for modernization of aircraft in service; $3,000,000 for photographic equipment. The $225,000,000 earmarked for research and development will provide $178,018,335 for aeronautical projects; $8,312,409 for service test facilities projects; $2,384,265 for medical research; $6,285,000 for climatological and meteorological projects; and $30,000,000 for a classified project.

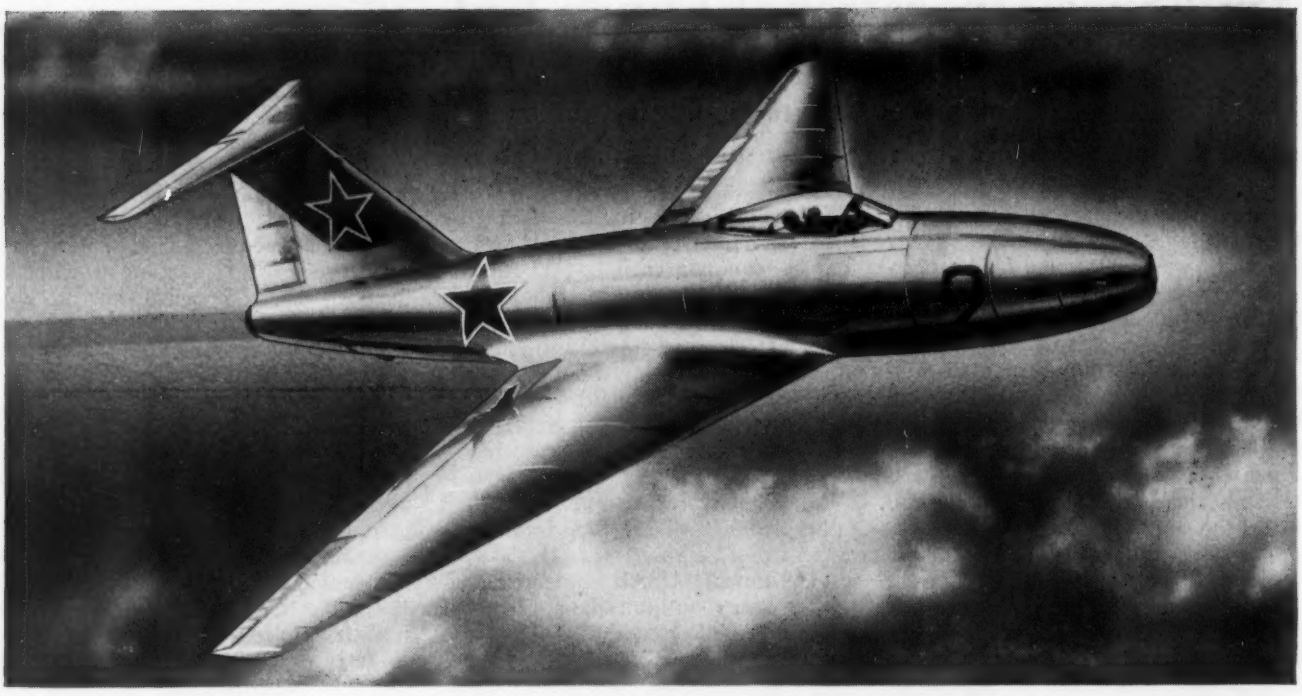
• Chief of Staff, $1,234,000. Pointing out that $5,607,000 of the $5,734,000 recommended for the office is earmarked to pay 1600 employes, the committee suggested that the cut be applied to reduce the force.

• Secretary for Air, $150,000. This would curtail employment of the 210 civilians contemplated in the recommended allocation of $900,000 for the secretary's office.



INTERIOR OF CHASE GLIDER

Interior of Chase Aircraft's all metal glider, the XCG-18A is shown at Wright Field, Ohio. Craft is intended for use with the Ground Forces as an assault weapon. It currently is being tested by the Air Materiel Command. Novel feature of the glider is the hydraulically operated rear door and ramp combination.



Russian version of DFS 346 jet fighter-research.

Secrets of Russian Jets Revealed

Details of plane designed for supersonic speed are shown in authentic sketch based on smuggled photos.

Highlighted by the first view of a fighter-research plane designed for supersonic flight, authentic drawings obtained exclusively by AVIATION WEEK show previously undisclosed details of latest Russian jet planes, which are already flying.

The drawings are the work of an experienced aviation artist who also is an aeronautical engineer. They are based on greatly-enlarged motion picture film smuggled from behind the Iron Curtain.

The photographs were taken from the ground with a camera equipped with a telescopic lens, as the planes were tested. They did not originate with the McGraw-Hill Moscow Bureau, but arrived in this country by a circuitous process.

Trained observers, both European and American, have been reporting rumors for months that a Russian jet plane has flown faster than sound. These reports have been bolstered by the confidential observation of an outstanding U. S. expert that at least one Russian plane over Korea had been tracked on radar at speeds above 600 mph.

And last month, Russian newspapers reported that an aircraft in the May Day celebrations flew over Moscow "at the speed of sound."

This plane can now be identified as the Russian design of the DFS 346, a plane begun by the Germans.

▶ **Swept Wings**—Two versions of the DFS 346 are now flying. Both have swept-back wings. The first has a straight-through air flow with intake in the nose and outlet at the tail. The second has intakes on each side of the fuselage.

Both versions have a swept-back fin and swept-back tail surfaces set on top of the fin—a configuration that was used in this country on the Curtiss XF-15C experimental Navy fighter.

The German design of the DFS 346 was to have been patterned after the DFS 228, a high-altitude photo-reconnaissance sailplane powered by rocket engine. The Germans never finished the DFS 346 and it, along with its engineers, presumably went into Russian possession at the end of the war.

▶ **Four-Jet Bomber** — Vying for importance with the design features of the DFS 346 shown by the carefully-scaled drawings is the new information revealed on Russia's four-jet bomber. It is an Ilyushin design, but with touches that resemble the Boeing XB-47.

The Ilyushin plane has a very thin airfoil section with the engine nacelles suspended from the wings, as is done in the XB-47. The plane has tricycle landing gear and because of the thin wing the gear retracts into the fuselage. There is reason to believe the Ilyushin may have some sort of tandem gear arrangement as used in the XB-47 and XB-48 to solve the retraction difficulties presented by the thin wing.

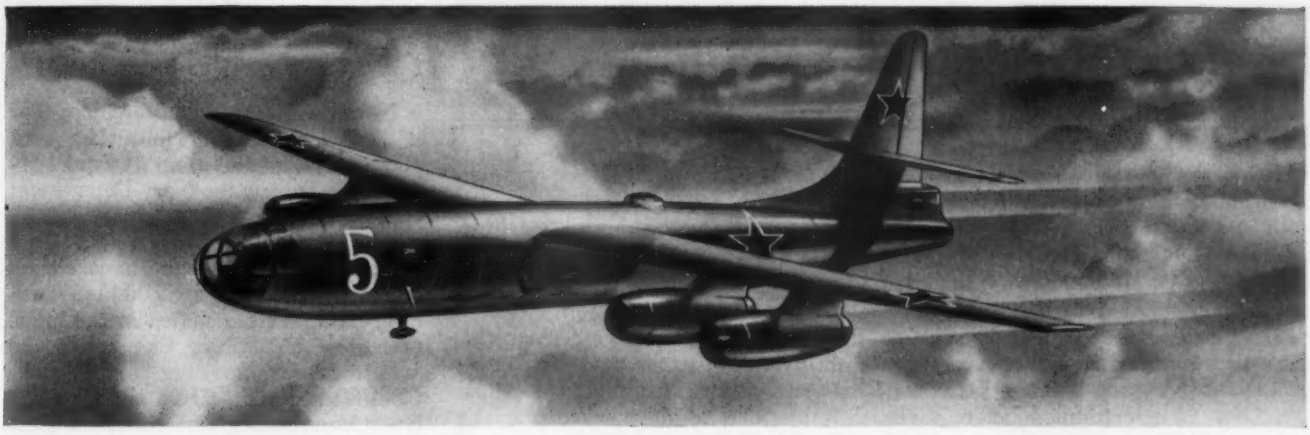
The four-jet Russian bomber has an unbroken countour from nose to tail, with pilot and copilot housed in the nose section. An interesting feature shown is provision for a tail gunner.

▶ **Twin-Jet** — Another Russian jet bomber, a twin-engine plane designed by Andrei Tupelov, is disclosed for the first time in the drawings. This is based on a reciprocating-engine attack bomber, the TU-2, but is larger.

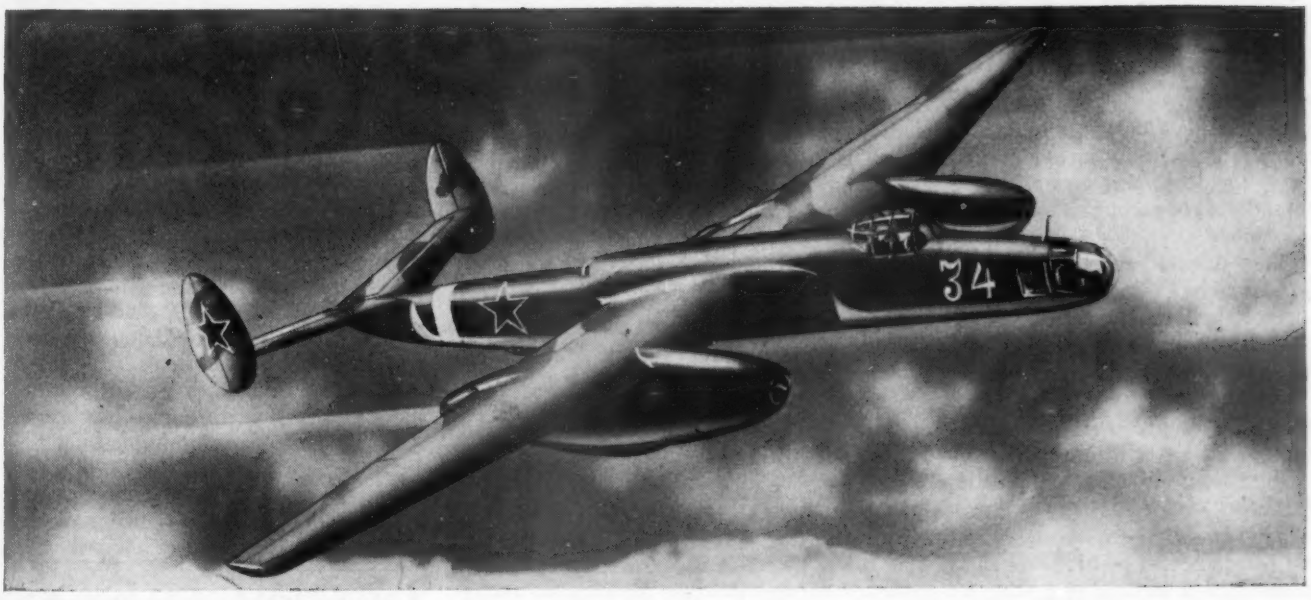
A remarkable feature of the Tupelov jet bomber is the enormous size of the engine nacelles. This probably is due to the engines, which are believed to be modified Junkers Jumo OO4H 11- or 13- stage axial-flow units with afterburning.

▶ **Jet Fighter**—There is good reason to feel that the jet fighter shown may be one of the Russians' most recent turbojet planes. It is reported to be the work of Artem L. Mikoyan, and a later version of the MIG twin-jet fighter reported in AVIATION WEEK, April 19.

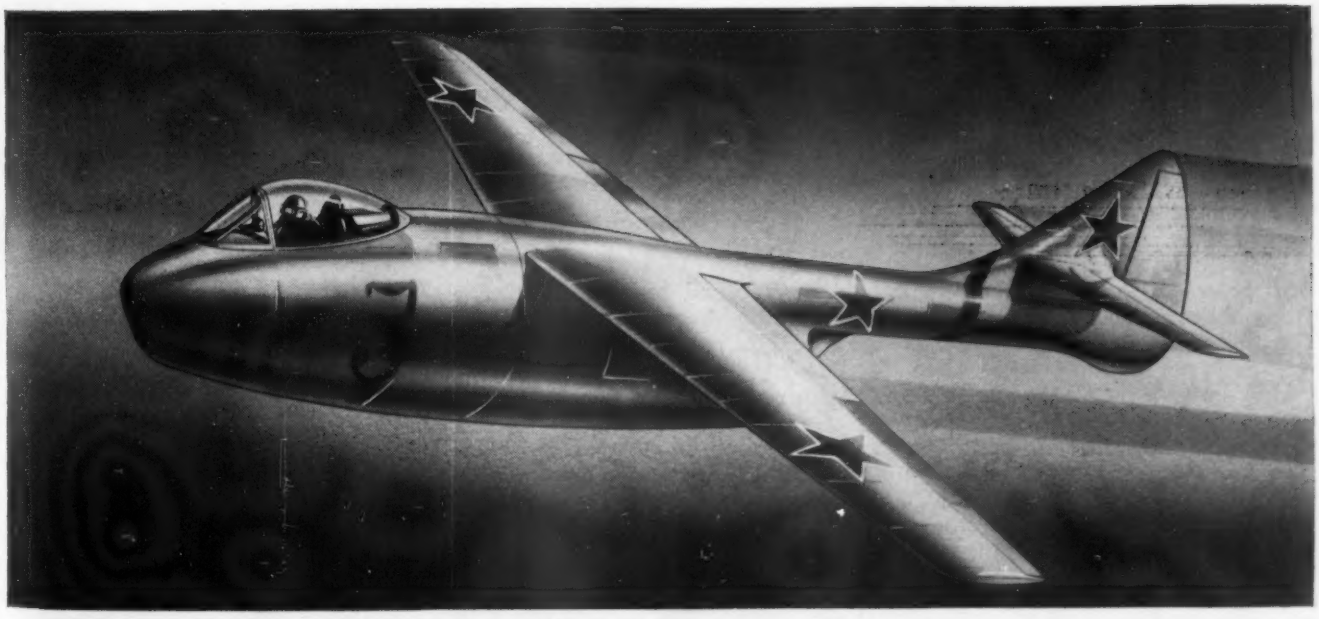
The new MIG has a single turbojet slung under the fuselage. Tail surfaces and pilot's cockpit apparently are the same as in the twin-jet plane, but the wing has been moved back and to the top of the fuselage. An interesting, although still unexplained feature, is the bulge under the empennage.



Ilyushin four-jet bomber.



Tupelov twin-jet bomber.



Mikoyan jet fighter. (World copyright on all drawings by Aviation Week.)

INDUSTRY OBSERVER

► **Boeing has now put in more than 400 hours in flight testing its three commercial Stratocruisers out of Wichita. CAA certification tests are well along and simulated airline reliability tests are scheduled to begin before the end of June. CAA tests completed include climb; stalls; control characteristics; engine cooling and accessories; landing runway lengths; and cross wind landings and take-offs.**

► Maj. Gen. Laurence C. Craigie, USAF director of research and development, last week confirmed an earlier AVIATION WEEK (May 24) report that the Boeing B-52, giant turboprop bomber, has been scaled down considerably from its original size. Gen. Craigie testified before a House Appropriations Subcommittee. The bomber will have eight jet engines driving four dual rotation propellors and is currently in mock-up stage at Boeing's Seattle plant.

► **British Ministry of Supply has ordered prototypes of the Bristol 175, a medium range transport aimed at out-performing the Lockheed Constellation. The Bristol 175 is expected to go into service during 1954.**

► USAF has ordered 100 sets of AN/APS-42 airborne radar units for installation in the Boeing C-97, Fairchild C-119 and Lockheed C-121 cargo planes. The sets cost about $12,000 each and weight 160 lb. installed. Mounted in the nose, they provide terrain clearance indication and navigation data when used with ground radar beacons.

► **Great Britain expects to have the world's first turboprop transport plane flying by September. Race for the first turboprop transport is between the Vickers Viceroy, and the Armstrong-Whitworth Apollo, both of which are powered by four Armstrong-Siddeley Mamba engines developing 1010 horsepower plus 320 lb. static thrust each.**

► USAF estimates that it costs $43,000 merely to take a Boeing B-29 out of storage and get it into condition to fly to a modification center where it can be reconditioned for combat operations.

► **Track landing gear, successfully tested on a Douglas A-20 and Fairchild C-82, will be used experimentally on the Boeing B-50. USAF is also experimenting with catapults as a method of getting jet propelled fighters into the air without a long take-off run. Navy uses catapults on its carriers to launch both propeller drive and jet propelled planes.**

► Navy plans to buy 89 Lockheed Neptunes in its fiscal 1949 procurement program. This includes 32 P2V-3 and 57 P2V-4 models. The Neptune production program will continue until 1952.

► **Jacksonville, Fla., and Quonset Point, Mass., are being developed by the Navy as new carrier bases. Norfolk, Va., is now the only Navy carrier base on the Atlantic coast.**

► USAF plans to turn over 772 trainers and liaison planes to the Civil Air Patrol. Most of these planes are now in storage.

► **Air phases of the Truman administration's military aid program to foreign nations are expected to require about 1700 planes from the USAF storage pools. They will be mostly piston engine fighters, twin engine trainers and transports.**

► Al Williams is now flying the only privately owned Grumman F8F Bearcat in the world, a special "Gulfhawk" obtained through cooperation of Grumman and the Navy. The orange-and-white speedster will be used for stunt flying exhibitions and advertising around the country. The 52-year-old former Navy pilot is still one of the finest stunt pilots in the air and may appear at the National Air Races in September if Navy permission can be obtained. The Bearcat holds the world's climb record of 10,000 ft. in 100 sec., still unmatched by jet fighters.

► **Three Boeing 314 flying boats formerly operated for many years by BOAC have been sold to World Airways, Inc., located at the Marine Terminal, Baltimore, Md.**

Navy Air Plans Given Setback

Naval Aviation's expansion plans took a set-back when the House last week clipped $42,268,000 from its fiscal 1949 budget in passing the Navy Department appropriation bill.

The service won a major policy controversy, however, when funds to begin construction on a 65,000-ton flush deck carrier were included in the measure. The 65,000-ton carrier was opposed by USAF's former chief of staff, Gen. Carl Spaatz. Chief of Staff Gen. Hoyt Vandenberg, has taken no position on the project.

House approved $575,000,000 for Naval Aviation: $440,000,000 for maintenance and operation of the shore establishment; $110,000,000 for research and development; $25,000,000 for replacement of navigation and radio equipment. This was $164,000,000 more than allowed for the activities for the current year. Budget Bureau recommended $617,268,000.

The research and development funds voted reflected approximately a 50 percent increase over this year's allocation of $75,000,000.

A total of $903,000,000–$315,000,000 cash and $588,000,000 contract authorization–for current and 1949 fiscal year Naval aircraft procurement was earlier rushed through Congress as a supplemental appropriation bill.

Of the total, $150,000,000 was for liquidation of existing contracts, leaving $753,000,000 available for new projects.

AVIATION CALENDAR

June 14-15—Airlines Medical Directors Association, annual meeting, Royal York Hotel, Toronto.

June 16-18—19th annual meeting, Aero Medical Association, Royal York Hotel, Toronto.

June 16-18—Tenth annual Western Safety Conference, Hollywood-Roosevelt Hotel, Los Angeles, Calif.

June 17-18—Aviation Distributors and Manufacturers Association, Grand Hotel, Mackinac Island, Mich.

June 18-20—New York's Annual Air Tour sponsored by the State Junior Chamber of Commerce, Tri-City Airport, Endicott, N. Y.

June 21-25—American Standards Association seminar by Dr. John Gaillard, Engineering Societies Building, New York.

June 21-25—1948 annual meeting, American Society for Testing Materials, Detroit.

June 22-23—Annual Ohio State Aviation Clinic, Bowling Green.

June 27-30—Annual convention, National Aeronautic Association, Hotel Radison, Minneapolis, Minn.

June 30-July 11—National Soaring Contest, Elmira, N. Y.

July 2-9—Second National Air Tour Week, United Pilots and Merchants Association.

July 4-5—Annual National Air Show, Port Columbus, Columbus, Ohio.

July 6-7—National Association of State Aviation Officials, Committee and Directors, Colorado Springs, Colo.

Funds Hiked

Congress ends work on CAA and CAB budgets, boosts CAB salaries.

Congress completed action last week on record-high budgets of $149,370,000 apportioned to the Civil Aeronautics Administration and $3,450,000 for the Civil Aeronautics Board.

CAA's allocation—$100,370,000 cash and $49,000,000 contract authorization—is $30,075,000 over the agency's current year $119,314,334 budget. CAB's appropriation is $410,000 over its $3,040,000 current-year budget. The measure also stipulates increases in the $10,000-a-year salaries paid CAB members: $12,000 for the chairman and $11,500 for other board members.

The $149,370,000 for CAA is earmarked for salaries and expenses, facilities, technical development, airport construction and Washington Airport:

- Salaries and expenses, $82,451,000. This is $9,488,232 over the $72,962,768 granted for the current year. Included in the allocation is $11,181,355 for enforcement of safety regulations (compared with the $9,700,000 allowed for the current year) and $7,830,335 for the operation of the present 153 control towers, plus 15 additional control towers proposed.
- Establishment of air navigation facilities, $22,099,000—$10,099,000 cash and $12,000,000 contract authorization. This is almost double the $11,149,066 provided for in the budget of the current year.
- Technical development, $1,800,000. Congress boosted CAA's current-year allocation of $1,600,000 with some reluctance, pointing out that "many of the research programs CAA has been engaged in in the past have proved of not too great significance."
- Airport construction, $40,000,000—$3,000,000 cash and $37,000,000 contract authorization. Congress converted the major portion of the $40,000,000 cash requested by the Budget Bureau for airports to contract authorization after being informed that of the $77,500,000 appropriated for construction to date, only $2,607,638 has actually been expended. Congress rejected demands of Dallas interests to bar expenditures on development of the greater Fort Worth International Airport midway between Fort Worth and Dallas. They predict development of the port will mean airlines will by-pass the present Dallas Airport.
- Washington National Airport, $3,020,000—$1,185,000 for operations and $1,835,000 for construction. This compares with a current-year budget of $1,102,000.

LETTERS

Stall Detector In Erratic Air

To The Editor:

I have read with interest William Briegleb's letter in the May 3 issue on approach problems caused by erratic winds near the ground. Mr. Briegleb felt that, while stall warning indicators were very desirable, they would be of little value in assisting a pilot on an approach.

Personal experience and reports from other pilots show, to the contrary, that the Safe Flight Indicator is an extremely valuable instrument for detecting the sudden variations in wind conditions to which Mr. Briegleb referred.

In rough, gusty air, the SFI will beep intermittently as gust conditions either cause accelerations which raise the stalling speed or the momentary reduction in airspeed. This intermittent warning tells the pilot to increase his climb or glide speed under rough air conditions.

The SFI very definitely gives immediate warning of a wind gradient where you may have a strong wind at 100 feet and little or no wind near the ground. Two separate experiences, one in which I was a participant, illustrate this:

a. Several months ago, Hugh de Haven and I were riding with Dr. Leonard M. Greene in his Fairchild 24. In the approach to Teterboro Airport, the air was very rough and gusty. Extra speed was added. About 40 feet, with everything seemingly well under control, the stall horn let go. Dr. Greene immediately added full throttle. Even with full power, the lull in the wind lasted long enough to let us drop all the way in for a very hard landing.

Dr. Greene, a 3000 hour pilot, did not feel this change until well after the horn had blown its warning. Had he been relying on his own normal reaction to this sudden change, we were all convinced the landing gear would have been damaged.

b. A very similar experience was encountered by a friend in his Culver Cadet. This pilot, one of the most experienced in the country, encountered a severe wind gradient on an approach in rough air and admits he saved his landing gear only because the stall horn warned him to apply throttle long before he felt or noticed the change himself.

WILLIAM D. STROHMEIER
Strohmeier Associates
New York, N. Y.

Safety Education

To The Editor:

I liked your recent editorial on "Careless Pilots Pay." Especially was I impressed by your closing question asking when personal aviation is going to embark on an educational program on safe usage of the airplane.

I'm all for aviation education, and especially air safety education. But will making reports of the sort represented by the Beech letter do much in this direction? Not many pilots are completely unaware of the dangers of flight under such conditions (or at least have not been told of them), but who has impressed upon them, and especially upon the coming generation of pilots, their responsibility for safe flight?

If we believe that personal aviation is going to be anything more than a toy or sport, why not begin in high school and college and in every flying school to teach the fundamental rules of the air road? It seems to me this ought to be a major part of the "Air Age Education" programs introduced by many State Departments of Education.

Then while we are at it, why not push the campaign to get more flight safety and more airplane utilization into our training syllabus? Place the emphasis more on the safe use of the airplane as a means of transportation and less on the mechanism of particular maneuvers.

To be sure the above is not especially new, but I'd like to add one more voice to the cry for the development of personal aviation into a grown up industry.

PAUL E. STANLEY
Assistant Professor
Purdue University
Lafayette, Indiana

Aeromatic Answers Briton

To the Editor:

We were interested in your letter, "Britisher on Welding," published March 22.

Mr. Davies is quite correct about the English firm Rotol having pioneered in the welding of aircraft propeller hubs, but he overlooked the fact that Rotol used the process of flash welding hub shells manufactured from plates fabricated by many steps, whereas we arc weld our propeller hubs from simple tubes which undergo only preliminary and final machining. Thus, both our welding manufacturing process and the raw material used differ basically from the methods employed by Rotol.

Both the writer and other members of this firm visited Rotol during the war and were shown the flash-welding process, its advantages and some difficulties. It was in no way similar to any process we use.

Neither is another process recently described in the Welding Journal of November 1947 which discloses a process employing a multiple pressure cycle of closed-joint pressure welding of forged steel propeller barrels. This is apparently a splendid process for the makers of big propellers and should effect great economies, but for a little propeller such as we manufacture there is no practical process which as yet equals the speed and economy of arc welding a couple of tubes together.

JOHN D. WAUGH
Public Relations Representative
Aeromatic Propeller Dept.
Koppers Co., Inc.
Baltimore, Md.

ALL THREE NEW AERONCAS
HAVE NEW
Sensenich PROPELLERS

Right on the Nose

AERONCA SEDAN

AERONCA CHAMPION

AERONCA SUPER-CHIEF

Pick your plane . . . the prop has already been picked as standard equipment by the aircraft designer.

If he doesn't know how to get the most out of the aircraft he designed, who does? When it comes to propellers, he says "Sensenich" more often than any other propeller name. The Aeronca designer said "Sensenich" on *all three* of the newest 1948 Aeroncas—the *Sedan*, the *Champion* and the *Super-Chief*.

Our advice has never changed: try one, fly one—and you'll know why 4 out of 5 personal planes powered under 250 hp are Sensenich equipped.

PROP-SHOP. All makes (wood) renewed promptly at main plant or West Coast Branch. Send them to Sensenich.

SENSENICH CORPORATION

Lancaster, Penna. **Glendale, Calif.**

AIRCRAFT SENSENICH PROPELLERS

TRADE MARK

A D M A

Italy's Lines

LATI to resume service this summer; other lines expand their activities.

ROME—Linee Aeree Transcontinentali Italiane (LATI), the only Italian company backed entirely by government capital, will resume its activities this summer. Four-engined SM.95s, now under construction at the SIAI Marchetti Sesto Calende works, will be used.

► **Italy's Airlines** — Actively operating airlines in Italy include the Airone, Transadriatica, Aviolinee Italiane (ALI), Linee Aeree Italiane (LAI), Salpanavi, Societa Italiana Servizi Aerei (SISA) and Aereo Teseo—all of which offer trunkline services—and AIAX, Icaro, Ltd., and Meteor, which run on a charter basis.

The Airone airline in Sardinia links the island with Italy. Operating four three-engined Fiat G.121s, the company has run several experimental flights to Tunis and Geneva and anticipates the establishment of services to the Balkans.

► **Domestic Airline**—The Transadriatica airline in Venice has routes throughout Italy and is currently using DC-3s in its operations.

AvioLinee Italiane (ALI), founded in 1928 and controlled by Fiat, is one of the oldest Italian airlines. At the outbreak of hostilities, ALI was operating direct flights to Paris, London, Brussels, Budapest, Bucharest, Varsavia, and Belgrade. When the war ended, ALI was re-admitted to ICAO as an observer, then as an active member. Douglas DC-3s and Fiat G-212s make up ALI's fleet.

► **LAI to Extend Services**—Linee Aeree Italiane is financed by capital from the Italian government and TWA (40 percent each). The remainder of the stock is held by private holders. LAI proposes to extend its services throughout Europe, the Mediterranean basin, Africa and the Americas. At present, the company is using 16 DC-3s reconditioned by Fiat.

Salpanavi, which began several years ago as an associate of the Cantieri Navali del Levante, created national and international services after the war and obtained the concession for the Milan-Bari line. The company currently uses DC-3s on loan from other airlines until the four-engined SM.95s it has on order are delivered.

► **Athens and Beirut Service**—The Societa Italiana Servizi Aerei (SISA) started in 1922 as a floatplane operator in the Cantieri di Monfalcone Shipyards in Trieste. SISA developed to the extent that when it re-established itself after the war, it was operating six DC-3s on its route to Athens and Beirut.

Aerea Teseo, founded in Florence after the war, established one of the first postwar foreign services (Florence-Rome-Lisbon). Its fleet consists of eight reconditioned DC-3s.

► **Aerial Taxi Service** — The AIAX Compagnia Italiana Aereoespressi, began its aerial taxi services on a charter basis in June, 1947. Maintaining bases at Milan-Linate, Rome-Urbe, and Varese-Venegono, the company's fleet is comprised of Fl-3s, MB-308s, UC-61s, Navions, Seabees, and Norsemen. In addition to its other activities, AIAX conducts flight-instruction courses.

Icaro, Ltd., fixed base operator, includes aerial dusting and flight school courses in its services. The company has a CA-309, a Breda 25 and 15S, and six Piper Cubs now operating.

The S.P.A. Meteor company was organized in March, 1947, but did not begin its charter services until Oct. 12 of that year. The company has fourteen planes in use for aerial taxiing, air publicity services and flight instructions.

New Services

Air France has established new Middle East services to Athens and Istanbul. The flight supplements the airline's Mediterranean Comet service from New York via Boston.

BOAC-South African Airways' cargo service between the U.K. and South Africa has been inaugurated with routes from London to Johannesburg via Tripoli, Cairo, Khartoum, and Nairobi.

British European Airways' first regular night passenger service across Europe enables anyone leaving London just before midnight to arrive in Athens by noon of the next day. BEA is also scheduling direct service to the French Riviera, starting June 18.

Philippine Air Lines has established DC-6 sleeper service between San Francisco and Manila, via Honolulu and Wake.

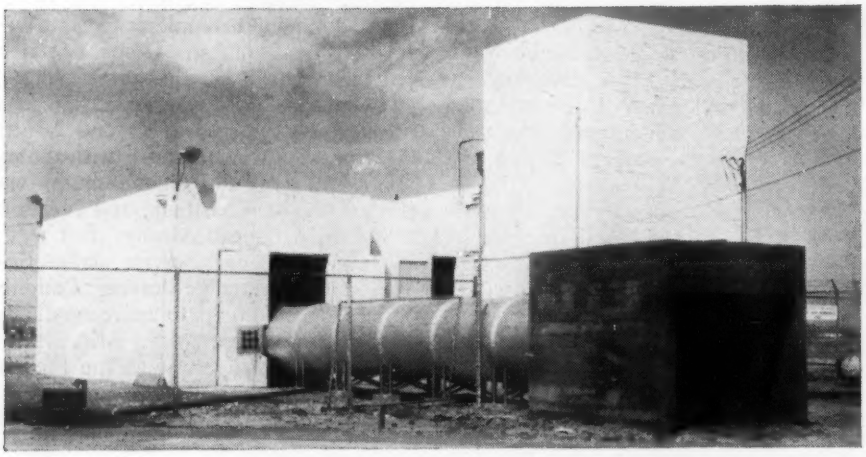
Air-India International's weekly service to Europe and Great Britain is scheduled to get under way this month. Service will be stepped up to two flights a week, and later to three when the last of Air-India's Constellations have arrived and crews indoctrinated.

Scandinavian Airlines System (SAS) will inaugurate daily DC-6 service between New York and the Scandinavian capitals beginning Aug. 1. SAS is also placing DC-6s on its run to Scotland and routes throughout Europe.

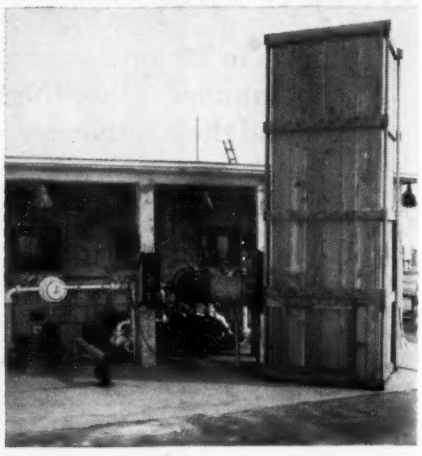
Grifo Sets Distance Record for Light Planes

Italian aviation, one of the most important factors in world records for speed, distance, and altitude during the 1930s, is trying a comeback. A small start has been made with the establishment of the first postwar international distance record for light planes. Record was won by Count Bonzi and Maner Lualdi, flying the SAI Ambrosini S.1001, Grifo, from Campoformido Airfield, Udine, to Massawa, Eritrea—2600 mi. in 23 hr. The previous record was held by two Russian pilots, Goussarov and Glebov, who flew a Maskalow plane from Moscow to Krasnojarsk, a distance of 2061 mi.

A low wing, three-place monoplane, the Grifo is constructed entirely of wood and is powered by a 130-hp. Gipsy Major S.I., built under a license by the Alfa Romeo. No special modification was made on the record-breaking plane other than the addition of two tanks, one of which was placed in back of the pilot, the other behind the apron. These alterations raised the total capacity of the tanks from 37 to 192 gal. With this additional load, the plane, which under normal conditions carried 12.5 lb./sq. ft., was carrying a load of 20.3 lb./sq. ft. Total weight amounted to 3300 lb. as against a normal weight when fully loaded of 2112 lb.



SOLAR AIRCRAFT CO.'s counter to terrific racket of jet and rocket engines is this "tuned tube" muffler. Engine exhaust gases are deflected upward through concrete box after passing through 40 ft. tube from engine test room.



LESS EXPENSIVE method is used by AiResearch. This wooden frame sound control tower was built for less than $1000.

Muffling Noise of Engine Tests

Airframe and associated manufacturers take novel steps to deaden sound and ward off civic complaints.

By Scholer Bangs

Advent of jet engines brought a new worry to airframe manufacturers: the high-frequency, far-carrying sound of engines when tested before installation in planes.

▶**Abreast of Situation**—Major East Coast engine builders have kept abreast of this situation, already having spent hundreds of thousands of dollars in silencing their multiple test cells. Airlines have built more moderate counterparts for run-in and testing of overhauled reciprocating engines.

But only recently have airframe manufacturers and associated industries become aware that they probably will have to fall in line and do likewise.

▶**Community Action?**—Their increased ground testing of turbojet and rocket power units has produced threats of community action — possible noise abatement suits; city council anti-noise ordinances.

On the West Coast there is evidence that wood exhaust deflectors; shifting of turbo and rocket test stands to new locations as complaints develop in a given area; and running tests only during hours of least public disturbance are, at best, makeshift escapes from public nuisance. Anticipated heavy military production will call for quantities of permanent test stands operating around the clock.

▶**Fertile Field**—That this condition already is producing a fertile field for the commercial sound control engineer is evidenced at San Diego, Calif., where Solar Aircraft Co. has installed a 40-ft. horizontal tube muffler for its jet engine test stand. This installation was effected by Cloyd Smith, president of Masco Engineering Service, Los Angeles, which represents the muffler designs of Homestead Industrial Sound Control of Hartford, Conn.

Homestead lays claim to soundproofing 85 percent of engine tests cells east of the Rockies. In the Solar installation the principle is that of reducing intial exhaust sound waves by absorption materials lining the tube, and by dimensional "tuning" of the tube to effect a resonance baffling of unabsorbed sound waves.

An installation such as Solars may cost in the neighborhood of $9000.

▶**Prices High**—Prices will mount, proportionately, for a building housing multiple mufflers, as contemplated by Navy for its Pt. Mugu air missile test center on the coast just north of Los Angeles; or a test cell such as one considered by Douglas at El Segundo to contain an entire airplane.

Conventional but costly ($275,000) is Pacific Airmotive Corp.'s cluster of four reciprocating engine test cells at Lockheed Air Terminal, Burbank, Calif. PAC spent $12,500 per cell in soundproofing the cluster. Result: For a decibel reading of 135 within a cell, a reading of 100 db. shows immediately outside the structure. Air dissipation cuts this to 40-50 db. 750 feet away, the nearest point of potential noise disturbance.

▶**Contrast**—In sharp contrast is the less than $1000 AiResearch Engineering Co., Los Angeles, spent in building an effective jet exhaust tower baffle of wood lined with Fiberglas, sheet metal, and hardware cloth. Unusually fortunate is Grand Central Airport Co., Glendale, Calif., which aims turbojet exhaust between the walls of abandoned warplane revetments toward the uninhabited reaches of the Los Angeles River channel. Cost: negligible.

Such are the initial approaches being made on the West Coast toward solution of an increasingly serious problem. There exists good evidence that with proper sound control a manufacturer can trim at least 30 db. from a jet test stand producing, uncontrolled, a painful 135 db. sound level. Noise will remain, it is true, but adjacent residential property owners will be more inclined toward tolerance in return for efforts toward making it less annoying.

Convair Plant Leased

North American Aviation has signed a three years' lease of the entire former Consolidated Vultee plant at Downey, Calif., and of its 160-acre airport.

NO. 29 IN THE SERIES FEATURING PROMINENT ESSO AIRPORT OPERATORS

Two Presidents Agree... ON ESSO!

"WITH US it's Esso — because of the wide customer acceptance of such outstanding aviation fuels and lubricants."

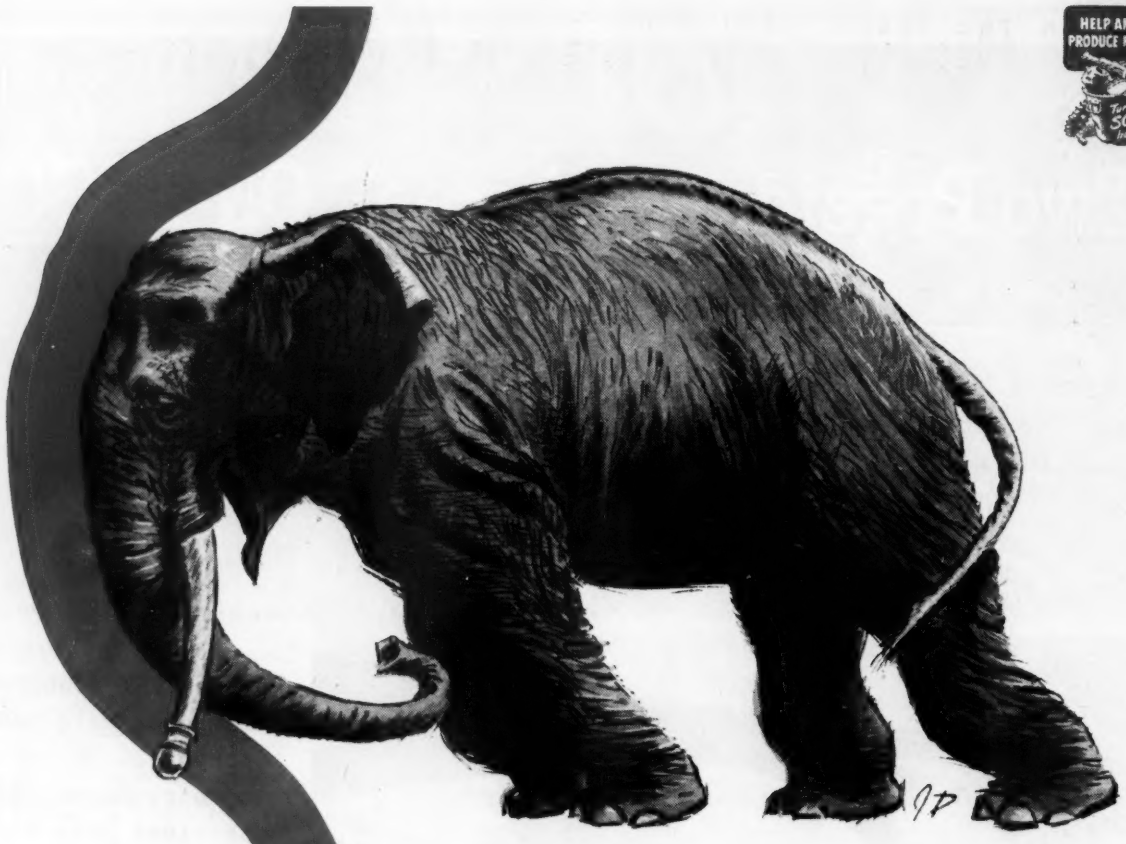
Capt. Jesse F. Stallings
President of Capitol Airways, Inc.
Cumberland Field, Nashville, Tenn.

"OUR FIRST requirement is dependable transportation. So we insist on our planes being serviced with Esso Aviation Products."

Harry B. Dyer, President
Nashville Bridge Company
Nashville, Tennessee

ESSO AVIATION PRODUCTS are the result of never-ending research... the joint effort of over 2000 scientists and technicians working in America's largest petroleum laboratories — perfecting the kind of aviation fuels and lubricants that experienced flyers have learned they can depend on!

HELP AMERICA PRODUCE FOR PEACE
Turn in SCRAP Iron and Steel



For the BIG Moves—

Actuators by Aeroproducts

If you have aircraft components to move—if the job calls for moving loads of 1000 lbs. or more—Aeroproducts has the actuator design to meet your needs. Reliable, compact, and light in relation to operating load, the basic design of the Aeroproducts Electric Actuator can be produced in sizes to meet your load requirements. In every Aeroproducts actuator, you'll find the same painstaking engineering and precision workmanship that distinguishes the Aeroprop itself.

Actuators as well as propellers require careful tailoring to the individual installation for optimum performance. By applying the efforts of our established field service organization to actuators as well as to propellers, Aeroproducts offers added assurance of successful actuator applications. Let us help you solve your actuator problems.

The Aeroproducts electric ball-bearing screw-type actuator is extremely adaptable as to loads, speed of stroke, use of available current supply, and other special installation requirements.

Aeroproducts

BUILDING for today
DESIGNING for tomorrow

AEROPRODUCTS DIVISION • GENERAL MOTORS CORPORATION • DAYTON, OHIO

New Blades for Better Helicopters

NACA develops series of laminar flow airfoil sections that have great lift-drag ratios, little pitching moment.

To improve helicopter performance, the National Advisory Committee for Aeronautics has developed a series of laminar-flow airfoil sections. They have little or no pitching moment, and lift-drag ratios almost twice as great as those of the NACA 230 series.

Airfoils of the new "H" series (rotating wing aircraft) detailed in Figs. 1 and 2, embody the most desirable characteristics. Curves of C_l vs. C_d are shown in Fig. 3, pressure distribution in Fig. 4, and pitching moment coefficient about the profile aerodynamic center and lift coefficient vs. angle of attack in Fig. 5.

Through application of these airfoil sections, such attributes as increased payload, improved hovering characteristics, safer operation, and diminished stress on rotor-hub bearings all contribute to improved helicopter design.

▶ **Evolution**—The airfoils were designed to keep extensive laminar boundary layers in the design range of lift coefficients.

To reduce the pitching moment, the tail of the airfoil was swept up. This was not entirely satisfactory, hence a tail extension was added. Finally, in an effort to increase the lift-drag ratio, a longer tail extension was used.

▶ **Analysis**—In combination with low pitching moment, low profile drags are desirable. However, the profile drag can not always be reduced in one range of lift coefficients without increasing the profile drag in another range.

Laminar airfoils are particularly well adapted to helicopter design because of their high critical Mach numbers. When a helicopter has a ground speed of 125 mph., the advancing rotor may have a translational velocity near the critical Mach number of the airfoil section.

For all conditions of flight the boundary layers on the blade will be subject to strong centrifugal and aerodynamic pressure gradients. In addition, for conditions of forward flight, the angle of attack, angle of yaw, and velocity will vary rapidly. The forces acting along the span of the blades will tend to make the separated flow run outward. The Coriolis effects will tend to sweep the separated flow off the trailing edge.

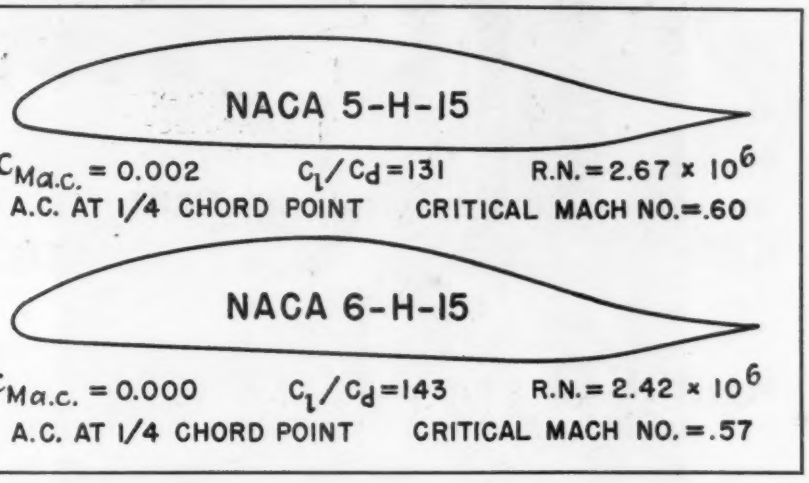
High values of maximum lift-drag ratio are very desirable for helicopters in the hovering condition and at low forward speeds. The significance of this criterion decreases as the forward speed of the aircraft goes up, since there is an increasing range of angle of attack through which the blade section operates.

For zero pitching moment, the forward portion of the airfoil carries more lift at a given lift coefficient than it would if there were no down load at the rear of the airfoil.

The boundary layer over the upper surface of a zero-moment airfoil is thus closer to separation at a given lift coefficient than is usual for a cambered airfoil with the lift spread more evenly over the chord.

If more pitching moment were allowed, the section would have a higher critical Mach number. Higher critical Mach numbers may be expected when there is an absence of local peaks in the pressure distribution.

Pitching oscillations with amplitudes



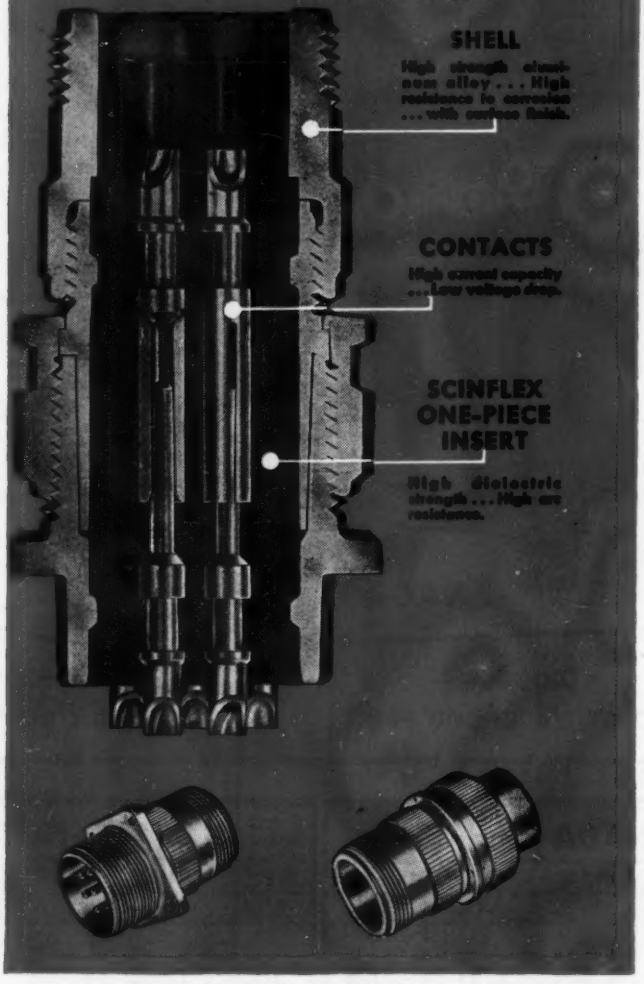
NACA 5-H-15			
UPPER SURFACE		LOWER SURFACE	
STA.	ORD.	STA.	ORD.
0	0	0	0
.192	1.225	.808	-.881
.409	1.501	1.091	-1.015
.861	1.973	1.639	-1.229
2.040	2.899	2.960	-1.599
4.476	4.294	5.524	-2.080
6.953	5.390	8.047	-2.422
9.454	6.311	10.546	-2.685
14.492	7.774	15.508	-3.090
19.565	8.904	20.435	-3.394
24.663	9.734	25.337	-3.626
29.782	10.331	30.218	-3.819
34.922	10.709	35.078	-3.993
40.090	10.841	39.910	-4.123
45.291	10.708	44.709	-4.250
50.635	10.171	49.365	-4.351
55.759	9.275	54.241	-4.459
60.772	8.193	59.228	-4.547
65.703	6.955	64.297	-4.541
70.575	5.658	69.425	-4.426
75.400	4.356	74.600	-4.166
80.157	3.098	79.843	-3.666
84.996	2.003	85.004	-2.793
89.968	1.087	90.032	-1.693
94.983	.372	95.017	-.656
100.000	0	100.000	0
L. E. RADIUS: 1.42			

NACA 6-H-15			
UPPER SURFACE		LOWER SURFACE	
STA.	ORD.	STA.	ORD.
0	0	0	0
.097	1.252	.903	-.788
.302	1.552	1.198	-.896
.736	2.068	1.764	-1.064
1.889	3.090	3.111	-1.334
4.300	4.647	5.700	-1.659
6.768	5.878	8.232	-1.872
9.267	6.919	10.733	-2.023
14.317	8.575	15.683	-2.251
19.414	9.855	20.586	-2.417
24.546	10.796	25.454	-2.550
29.706	11.468	30.294	-2.676
34.895	11.883	35.105	-2.817
40.121	12.017	39.879	-2.947
45.392	11.834	44.608	-3.116
50.855	11.168	49.145	-3.310
56.020	10.084	53.980	-3.582
61.035	8.794	58.965	-3.872
65.943	7.343	64.057	-4.085
70.772	5.848	69.228	-4.184
75.538	4.374	74.462	-4.118
80.211	2.996	79.789	-3.762
84.994	1.865	85.006	-2.931
89.957	.980	90.043	-1.798
94.977	.322	95.023	-.706
100.000	0	100.000	0
L. E. RADIUS: 1.42			

Fig. 1 (top): Characteristics reflex trailing edge of NACA "H" airfoils. Note high L/D ratios for these profiles. Fig. 2 (above): Ordinates indicate maximum thickness at 40 percent points, reflex contours beginning at 65 and 75 percent points, respectively.

BENDIX-SCINTILLA

the finest ELECTRICAL CONNECTORS money can build or buy!



AND THE SECRET IS SCINFLEX!

Bendix-Scintilla* Electrical Connectors are precision-built to render peak efficiency day-in and day-out even under difficult operating conditions. The use of "Scinflex" dielectric material, a new Bendix-Scintilla development of outstanding stability, makes them vibration-proof, moisture-proof, pressure-tight, and increases flashover and creepage distances. In temperature extremes, from —67° F. to +300° F., performance is remarkable. Dielectric strength is never less than 300 volts per mil.

The contacts, made of the finest materials, carry maximum currents with the lowest voltage drop known to the industry. Bendix-Scintilla Connectors have fewer parts than any other connector on the market—an exclusive feature that means lower maintenance cost and better performance.

*REG. U.S. PAT. OFF.

Write our Sales Department for detailed information.

• Moisture-proof, Pressure-tight • Radio Quiet • Single-piece Inserts • Vibration-proof • Light Weight • High Arc Resistance • Easy Assembly and Disassembly • Less parts than any other Connector

Available in all Standard A.N. Contact Configurations

BENDIX SCINTILLA — SCINTILLA MAGNETO DIVISION OF SIDNEY, N. Y. — AVIATION CORPORATION

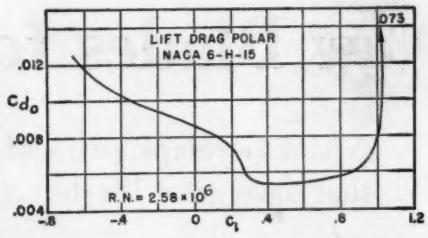


Fig. 3. Polar curve indicates comparatively narrow range of low-drag coefficients from C_l values between 0.2 to 1, and rapid drag increase above 1 as laminar flow separates.

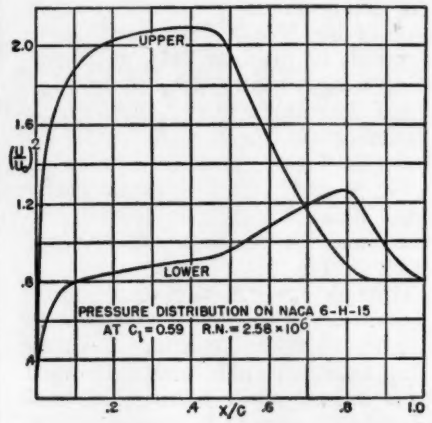


Fig. 4. Pressure distribution in terms of longitudinal component of velocity indicates characteristic positive pressures over lower surface aft of 55 percent chord, negative over upper surface aft of 75 percent chord.

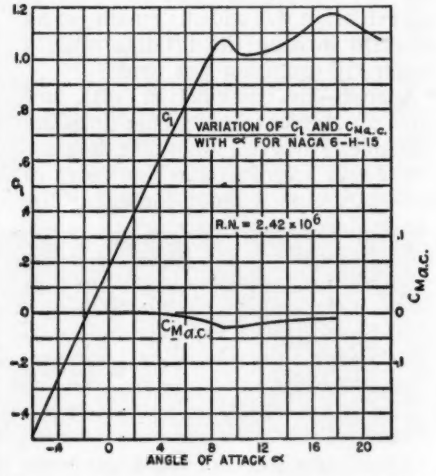


Fig. 5. Conventional C_l vs. angle of attack curve indicates peculiar preliminary stall at 9 deg. followed by stabilization of flow up to 17 deg. Advantageous flat moment curve indicates value of reflex trailing edge as stability producer.

of about 2 deg. and a frequency of about 2 cps. were observed at the high-lift end of the low-drag range for the NACA 2-H-15, 3-H-13.5, 4-H-12.4, and 6-H-15 sections.

No oscillations were observed for the 5-H-15 airfoil under the same test con-

(Continued on page 33)

UPHOLSTERED AIRPLANE SEATS...

WEIGH LESS —COST LESS

ASSURE *UTMOST* COMFORT when cushioned with

EXECUTIVE PLANES

Whether you're interested in operating, building, or maintaining airplanes, the factor of *dead weight* is of prime importance to you. Less dead weight means improved flight performance . . . or greater payload capacity . . . or increased range.

And *cost* is an essential item in your thinking, too—**or should be.**

Fly-light Nukraft . . . miracle figure 8 hair-latex cushioning . . . will *positively* accomplish two things in your airplane seats: *it will reduce weight and lessen cost.* Again: Nukraft will reduce *weight* and lessen *cost.* Not claims . . . but *facts* . . . time-tested and flight-proved—even on standard seats rebuilt and cushioned with Nukraft.

Fly-light Nukraft is *luxury* cushioning—gives deep restful comfort—the kind passengers and crews appreciate. *And* Nukraft may reduce your seating maintenance expenses. It's tough, resilient, long-wearing.

Send for test samples and full information today.

Nukraft MANUFACTURING CO., INC.
SHELBYVILLE, INDIANA

CABLE ADDRESS NUKRAFT — SHELBYVILLE — or PAULHAREX — CHICAGO

Fuel Freezing Hazards Studied

Normal water content of fuel found to lead to icing. Possible solution: addition of small quantity of alcohol.

By Lon Storey, Jr. and

J. C. Duffendack*

Another serious factor related to aircraft operation under low temperature conditions has recently been brought to light.

Laboratory studies now indicate that some inherent characteristics of aircraft fuels can present a hazard brought about by the precipitation of ice crystals from the small percentage of water normally dissolved or entrained in the fuel.

After investigation of circumstances of an accident in Alaska and examination of field service reports on fuel system malfunctioning under low temperatures, tests were conducted in the Lockheed power plant laboratory to observe the action of micronic fuel filters with changes in the viscosity of fuel subjected to extreme cold.

Instead of finding an effect resulting from viscosity change, it was observed that there was a definite ice crystal precipitation causing high increases in pressure drop across the filter and visible clogging of the filter element with slush.

It is believed that this ice precipitation is particularly dangerous to aircraft powered by turbojets, turboprops, and fuel injection engines, since with these installations, satisfactory operation of a micronic fuel filter is a necessity.

▶**Test Equipment Described**—The test setup employed was a completely closed fuel circulation system, consisting of a fuel tank; electrically driven, centrifugal submerged fuel pump (controlling flow via adjustment of supply voltage to vary pump speed); positive displacement flowmeter; the test filter unit; and a set of cooling and heating coils for controlling fuel temperature.

Fuel filter tested was a low pressure unit with a micronic type paper filter element identified as AN6236-2.

Performance of this filter element is prescribed in Specification AN-F-3, giving a nominal test fuel flow rating of 15 gpm. at element pressure drop of 1.8 in. of mercury.

The term "micronic," as applied to this element means that virtually all foreign matter larger in particle size than 10 microns will be removed from the fuel passing through the filter.

The fine filtration provided is more typical of the filter normally used for airplane hydraulic systems and is the same afforded by filters now in use on the precision fuel systems of turbojets, turboprops, and fuel injection reciprocating engines.

The filter body was equipped with integral bypass valves set to crack at 3 to 5 psi. and to deliver up to 20 gpm. flow through the valves at a pressure not exceeding 8 psi. Any fuel flowing through these valves is unfiltered, and dirt contained is passed downstream in the system.

Static pressure drop across the filter was measured with a mercury manometer, one leg being connected to a static tube on the inside of the filter element, and the other connected to a static tube on outside of element.

These static tubes were located (Fig. 1) in the large volume sections of the filter unit. This was done to obtain the true pressure drop across the filter element, eliminating any effect of velocity which may have been encountered if the tubes were located in the pipe elbow connection of the filter unit inlet and outlet.

Fuel temperature was measured with a thermocouple located in the line, approximately 8 in. upstream from the inlet to the test filter unit.

Fuel used during the test was aviation jet type kerosene grade. Additional test runs were made with 100/130 gasoline.

▶**Test Procedure**—Fuel was circulated through the system under room temperature until all dirt was removed. A new filter element was installed, and speed of the pump was adjusted to give a flow of 12 gpm. Fuel pressure and temperature readings were also recorded.

The fuel was then circulated over the cooling coils and the temperatures lowered approximately 10 deg. F. per reading, until temperature was reduced to below −40 F. or until the pressure drop through the filter was so great that the pump could no longer maintain the desired flow.

The value of 12-gpm. flow was used because it was the maximum that could be maintained throughout all of the conditions of the test.

Before the pressure-drop tests were made on the filter element, the relief valve setting was determined. The valve cracking pressure was found to be 8 in. Hg. or 3.9 psi.—approximately halfway between the design requirement limits of 3 to 5 psi.

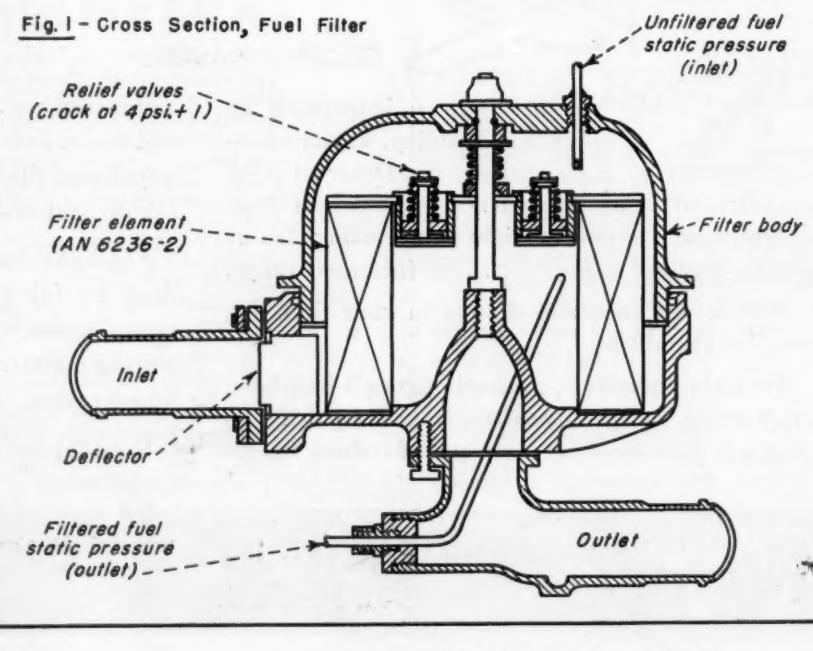
▶**Cold Test, Valves Free**—A test was run with the filter in the normal condition as installed in the airplane (relief valves were not blocked). As shown on Fig. 2, curve A, as the temperature decreased the pressure drop across the filter increased.

At approximately 0 F., pressure drop exceeded the relief valve cracking pressure of 8 in. Hg. The knee in the curve at 12 F. was later explained as the approximate starting of the formation of ice slush.

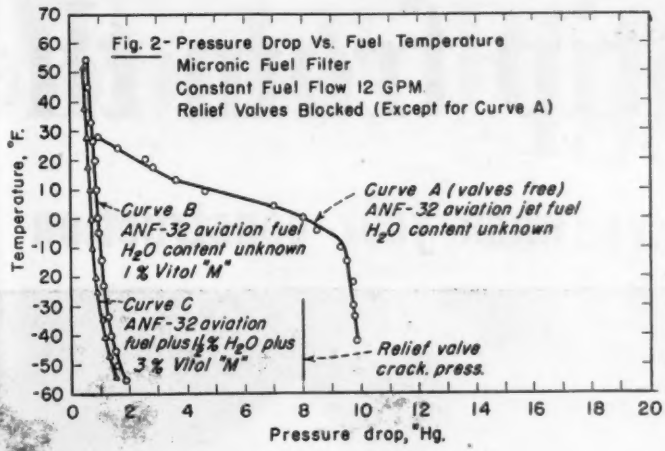
It is believed that the shape of the curve is controlled by the combination of the ice formation, blocking of the filter, and the opening of the relief valves.

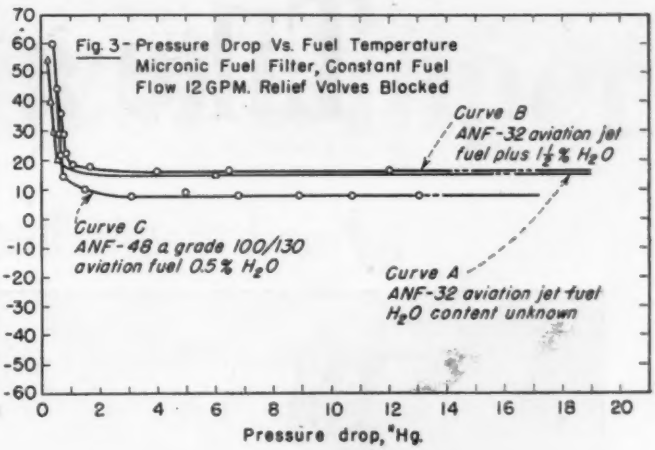
▶**Relief Valves Blocked**—It was then

Fig. 1 - Cross Section, Fuel Filter



* Power plant staff engineer and power plant laboratory manager, respectively, Lockheed Aircraft Corp.





decided to block the relief valves and check the pressure drop through the filter element alone. Valves were blocked by inverting the top hold-down plate of the filter element.

The first test with this configuration gave the results shown on curve A, Fig. 3.

Pressure drop increased slightly with the lowering of temperature until approximately 15 F. was reached, when there was a gradual increase in pressure drop without a change in temperature until capacity of the pump was exceeded and fuel flow began to decrease.

The filter element was removed and found to be completely filled with icy slush, as pictured in Fig. 4. Water content of the fuel was unknown because so much water was removed with the filter in the form of ice, and the test was therefore repeated.

This repeated test included the conditioning of a quantity of fuel, which was believed to contain very little water, by circulating through a filter and reducing the temperature −42 F.

Pressure drop through the filter increased only slightly and there was no ice or slush present at the conclusion of the test. An analysis was made of the fuel and showed it to contain an immeasurably small amount of water.

After the fuel had been conditioned, water was added and thoroughly mixed at room temperature. An analysis checked the water content at 1½ percent. This fuel was then circulated through a new filter and curve B Fig. 3, was obtained. These results practically duplicate those obtained with the fuel of unknown water content.

▶**Anti-Freeze Added**—Due to the ice slush formation in the filter, it was decided to add an anti-freeze solution to the fuel with the unknown water content. Vitol "M" was added to give a mixture of 1 percent by volume. This anti-freeze alcohol is manufactured according to specification AN-A-24, plus isonitiral (deodorant).

Curve B, Fig. 2, shows that the pressure drop through the filter at low temperatures was considerably reduced by the use of the anti-freeze. The pressure drop reached a maximum of only 1.8 in. Hg. at −55 F., and inspection of the filter at the conclusion of the test showed it to contain no ice slush.

To the fuel with the known 1½ percent water content, 3 percent of Vitol "M" was added. Curve C, Fig. 2, shows results of a test, using this mixture, to practically duplicate those given above, with only a slight increase in pressure drop at temperatures down to −55 F.

▶**Tests With 100/130 Gasoline**—All of the tests described were made with aviation grade kerosene because most of the immediate problems involved aircraft using this type fuel.

There is, however, no known reason why all types of aircraft fuels will not behave in a similar manner, with probably a slight change in the temperature at which the water freezes out of solution.

A test using grade 100/130 fuel with ½ percent water by volume was made, and data are given on curve C, Fig. 3.

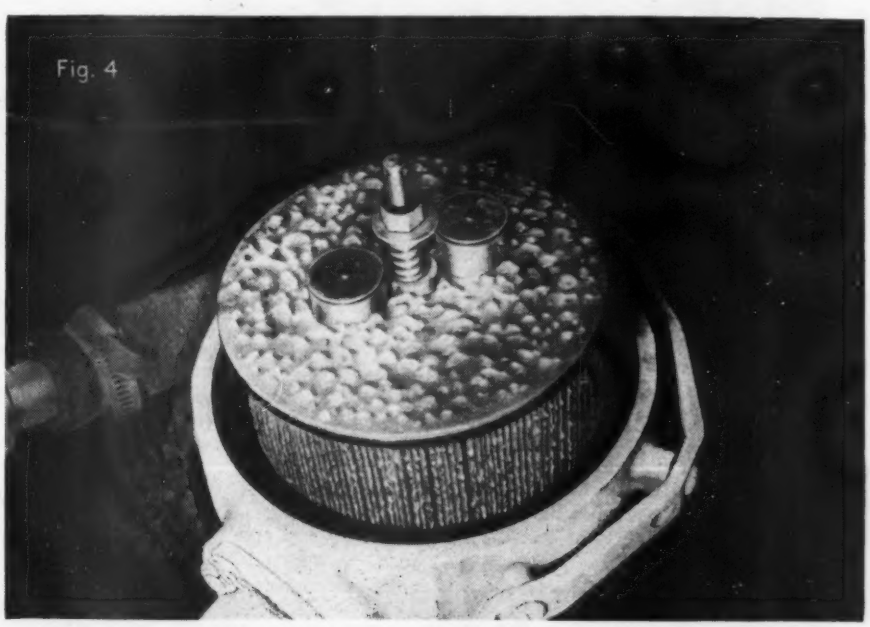
As temperature was decreased from 60 to 15 F., there was practically no increase in pressure drop across the filter element. With further decrease in temperature to 7.5 F., the pressure drop increased to approximately 3 in. Hg., and while maintaining 7.5 F., the pressure drop gradually increased until it exceeded the pump capacity and caused reduction of flow.

Comparison of this curve with preceding curves based on kerosene shows that the behavior of ice crystals for both fuels is similar.

▶**Fuel Characteristics**—Examination of specifications for both grades of fuel used in these tests indicates that the maximum permissible water content is approximately 2½ percent by volume. This water may be present in two forms; dissolved or entrained as an emulsion.

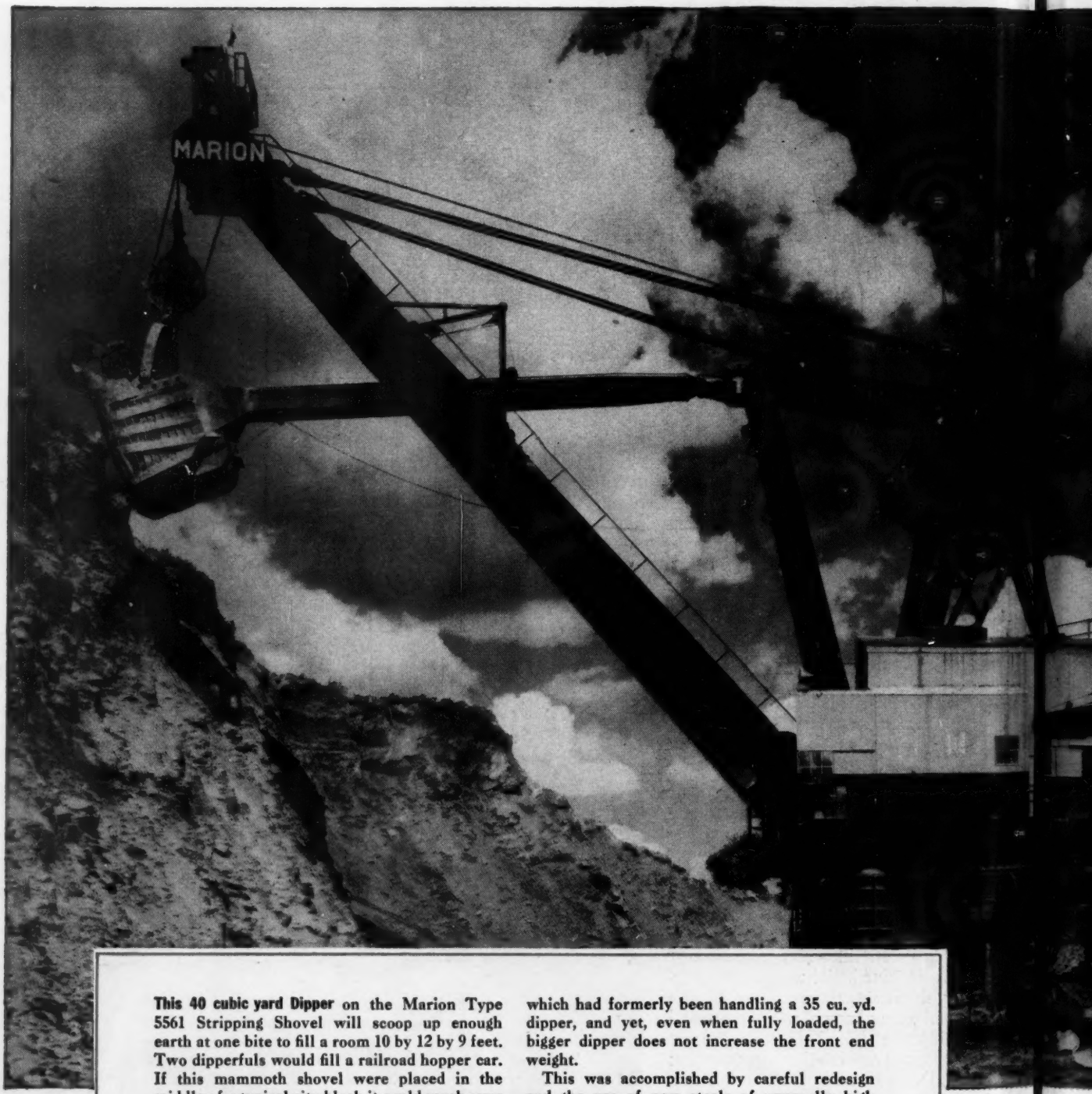
In the course of these tests, the actual water content of the several quantities of fuel used varied from a negligible amount to approximately 1½ percent, averaging about 1 percent, which is considerably below the maximum permissible in the fuel specification.

Examination of specifications governing the method of testing of aircraft



Take a tip from the

when your construction



This 40 cubic yard Dipper on the Marion Type 5561 Stripping Shovel will scoop up enough earth at one bite to fill a room 10 by 12 by 9 feet. Two dipperfuls would fill a railroad hopper car. If this mammoth shovel were placed in the middle of a typical city block it could reach over into the next block and dump its enormous load on top of a 7-story building.

What is even more amazing is the fact that this 40 cu. yd. dipper was installed on a machine which had formerly been handling a 35 cu. yd. dipper, and yet, even when fully loaded, the bigger dipper does not increase the front end weight.

This was accomplished by careful redesign and the use of new steels of unusually high strength which cleared the way for a dipper and handle design which is 30,000 lb. lighter than materials formerly used in achieving the same strength.

World's Biggest Dipper

requires strength far beyond the ordinary

New, superior-strength alloy steel—tough and readily welded—reduces weight of dipper and handle 30,000 lb. . . . and makes possible a 14% increase in shovel output.

IF you are interested in the possibilities offered by *readily welded* steel plates that have far greater strength and toughness than low-alloy, hot-rolled steels, this story is for you.

Four years ago the engineers of the Marion Power Shovel Company came to us. They had a real problem. They were called upon to design and build a coal stripping shovel of greater capacity than the 35 cu. yd. size—largest in existence at the time—without increasing the front-end weight. What they wanted to know was: could we give them a steel that would have strength considerably beyond that available in the low-alloy, hot-rolled steels?—could it be welded and fabricated by conventional means?—could it be furnished in large plates?—could its cost be kept within economically practical limits?

The answer was "yes." After considerable research and testing, a copper-nickel-molybdenum steel that had been developed for gun mounts during the war was modified to fit the job. This steel has consistently shown a yield point in excess of 80,000 psi and tensile strength in excess of 100,000 psi, and has shown excellent weldability. In addition it has high impact strength, even at sub-zero temperatures. These properties lent themselves readily to Marion design, gave them almost 50% greater strength than obtainable formerly.

The steel was furnished in *heat-treated* plates, ¾" and 1¼" x 64" x 200". Used in the dipper handle in two U-shaped formed sections welded down the center of the sides, it reduced handle weight 25.5%. It was also used in sides and back of the dipper itself, which, although it is 14% larger than the former 35 cu. yd. dipper, weighs 10% less. The steel performed so successfully that it is now being used in *complete* dippers from 10 to 40 cu. yd. capacity.

We have gone into detail on this job because it so aptly illustrates two things:—first, the specialized metallurgical alertness and "know-how" that we can bring to any problem involving the use of alloy steels. And, second, our unequalled mill facilities for rolling, finishing and heat-treating that make it possible for us to supply alloy steel plates, in any analysis—in any size—in any heat treatment, to meet your requirements no matter how exacting. If your job demands the unusual in strength, abrasion resistance, durability, stamina, forming qualities—put it up to Carilloy Research.

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO,
PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
SOUTHERN DISTRIBUTORS
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE
DISTRIBUTORS, COAST TO COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Carilloy Steels

USS

ELECTRIC FURNACE OR OPEN HEARTH

COMPLETE PRODUCTION FACILITIES IN CHICAGO AND PITTSBURGH

UNITED STATES STEEL

Measuring Exhaust Gas Temperatures TURBO-ENGINE

For Airborne and Test Stand use, install these recently developed assemblies of Chromel Alumel Thermocouples, Paralleling Harness, Connector Blocks, Fire Wall Disconnects and Extension Lead Wires. Minimum installation time required. Thermocouples are easily replaced.

These assemblies have been especially designed and are exclusively produced for Turbo-Engine use. Made with several standard types of tail-pipe thermocouples and harnesses that fit most Turbo-Engines. They are easily modified to fit your specific requirements.

Write today for 4 page catalog section 11B illustrating and describing these Turbo-Jet Thermocouple assemblies.

We also make a complete line of

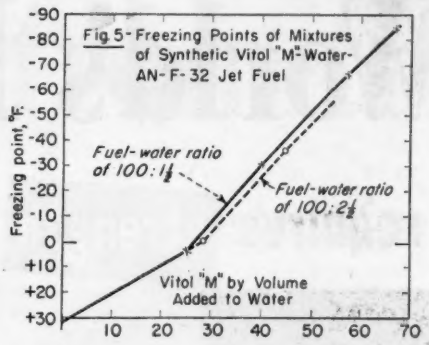
THERMOCOUPLES—QUICK COUPLING CONNECTORS
EXTENSION LEAD WIRES
for Aircraft and Reciprocating Engines

Thermo ELECTRIC CO.
FAIR LAWN, N.J.

Ask
Dumont about
STANDARD AN BOLTS • NUTS • SCREWS
FITTINGS • PINS • RIVETS • PULLEYS
CABLE ACCESSORIES • WASHERS
SPACERS • BEARINGS
HOSE • HOSE CLAMPS
DZUS FASTENERS
In a complete range of sizes . . . by the carton or carload . . . for Aviation, Automotive and other industrial uses.
STOCK LIST
Send for STOCK LIST
Dumont
AVIATION & SUPPLY CO.

1300 East Palmer Ave., Compton, California

Mfrs. & Distributors of Aviation & Commercial Hardware



fuels, in part, describes the probable appearance of a cloud point at a temperature of approximately 14 F. This temperature coincides with that established in these tests at which ice crystals apparently first began to affect the performance of the filter element.

In conjunction with the tests, the Lockheed chemical research group conducted a series of experiments on the freezing point depression of water in aviation grade kerosene by the addition of anti-freeze.

Synthetic Vitol "M" was added in varying amounts to standard mixtures of water and kerosene, and freezing points were determined by chilling a sealed container of the test mixture. The mixture was shaken while it was being cooled and the freezing point taken as the temperature at which the water-alcohol phase started to "ice."

Results of these experiments, graphed on Fig. 5 showing curves of freezing point temperatures vs. percent Vitol "M" in solution in water, are given for mixtures of 100 parts kerosene fuel and 1½ and 2½ parts water.

It can be seen from this data that the freezing point for a solution of equal parts of water and alcohol in a solution with 100 parts of kerosene is approximately −52 F.

It is believed that such a mixture would be satisfactory for use with the micronic type of fuel filter at temperatures to approximately −40 F. It is felt that the safe operating limit should be at least 10 deg. above the freezing point of the mixture.

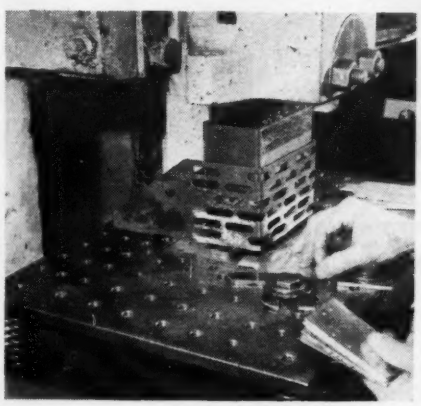
During the tests a filter element that had been plugged with slush and caused an increase in pressure drop at approximately 15 F. was found to have collected 0.9 lb. of water. This is equal to approximately $\frac{1}{10}$ gal. of water, which would indicate that if the temperature was low enough and if the filter collected all of the water, the fuel would only have to contain 0.1 percent water per 100 gal. to plug the filter and cause the opening of the relief valves.

From results obtained, it may be concluded that:

• Small percentages of water normally contained in fuels can result in hazardous malfunction of aircraft fuel systems

under low temperature conditions.

- Precision fuel systems of the type used for turbojet, turboprop, and fuel injection reciprocating engines are most seriously affected by ice precipitation from fuel, particularly when micronic type fuel filters are used in these systems.
- Both kerosene and gasoline type fuels can have appreciable ice precipitation at fuel temperatures of approximately +15 F.
- Ice precipitation effects on fuel systems operating in cold weather conditions must be diagnosed on the basis of actual fuel temperature rather than ambient air temperature, for the reason that the fuel is frequently warmer or colder than air temperature would indicate.
- Ice precipitation may be effectively prevented by the addition of alcohol to the fuel in small quantities approximately equal to the anticipated water content of the fuel, and this should be adequate for fuel temperatures down to approximately −40 F.



New Notching Method Saves Time on Press

An improved method of performing notching operations on a punch press has been developed at the Glenn L. Martin Co. by Herbert A. Stran.

The procedure–utilizing an adapter plate and safety guard–is claimed to save considerable time in set-up and in running production parts.

The adapter plate is fastened to the bolster plate with four dowel pins and set screws, assuring accuracy of work. Plates formerly used were somewhat unsatisfactory since they had to be wired at one end to keep from shifting.

The slotted steel safety guard, with flange bent under and bolted to the adapter plate, affords a clear view of the operation. Eliminated is two-hand control, thereby speeding up the production run.

It is estimated that a saving of two hours per eight-hour running time on each punch press has been realized.

Klad Polish gives Martin 2-0-2 Transports a showroom shine at less cost!

The Glenn L. Martin Company and Northwest Airlines are enthusiastic boosters for Klad Polish! Martin uses Klad Polish to slick up its air giants for delivery. Northwest uses Klad Polish to *keep* the ships looking slick. They both know that Klad Polish does a better job *in one operation* . . . saves man-hours and money.

When necessary, Klad Polish can be applied to the whole ship before it is rubbed down. And you'll find it much easier to rub down Klad Polish—even if it has thoroughly dried in direct sunlight. These facts and the outstanding efficiency of Klad Polish add up to better results with substantial savings in man-hours and costs.

This is only one item in the *complete* line of Whiz Aviation Chemicals that help airlines, plane manufacturers, and fixed base operators get better results at lower costs. A Whiz distributor in *your* territory is prepared to give prompt service.

R. M. Hollingshead Corporation, Camden, New Jersey; Toronto, Canada.

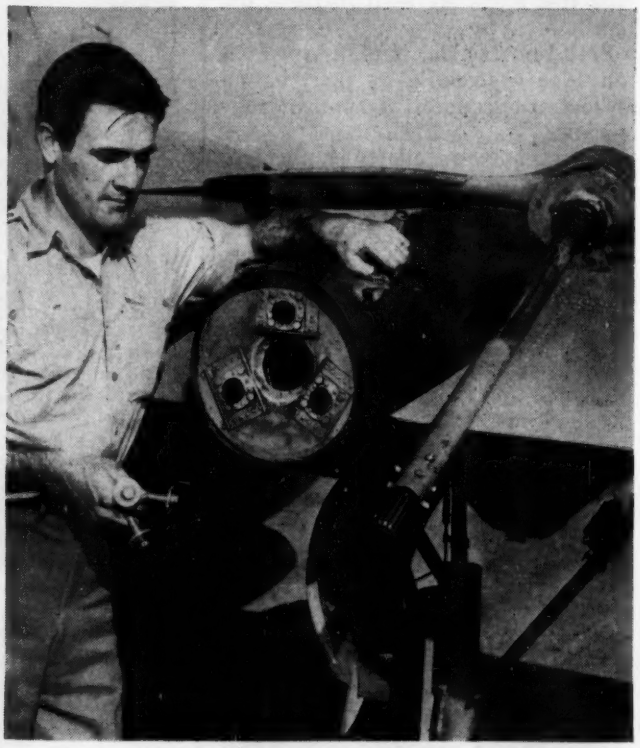
The complete WHIZ line includes Klad Wax for aluminum surfaces; an all-purpose Windshield Cleaner; a Cleaner and Wax for painted and doped surfaces; Hydraulic Fluids; Degreasing Concentrates; Fast Acting Paint Strippers; and other important, time-saving, labor-saving items.

Whiz AVIATION CHEMICALS

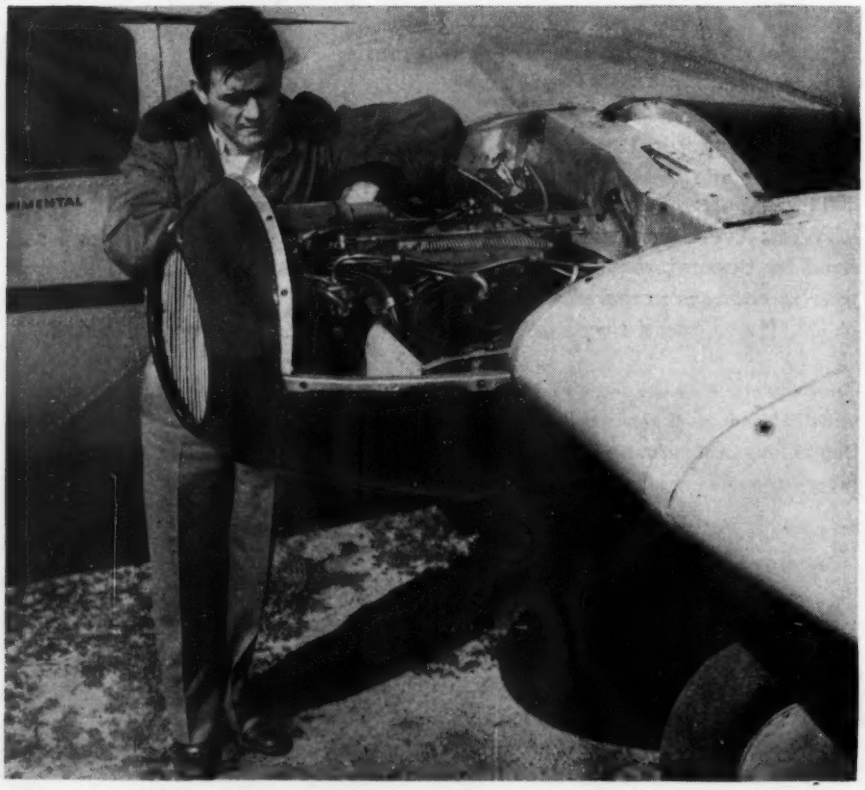
A D M A

PRODUCTS OF *Hollingshead*

LEADER IN MAINTENANCE CHEMICALS



Brigadier 250: Everything Within Reach



Design simplicity that results in easy inspection and maintenance is manifested in the Baumann Brigadier 250. Upper left: Unfastening three bolts permits quick removal of pusher propeller and shaft. Right: Closeup of nacelle end shows three floating rubber Lord mounts for suspending propeller installation. Left: Easy access to power plant is afforded from ground standing position.

New Blades (from p. 24)

ditions. The 6-H-15 airfoil underwent a sudden and violent oscillation at an angle of attack of −9.3 deg.

▶ **Reservations**—The H type sections are unduly sensitive to roughness or "hills and dales." Any surface imperfection that can be felt by the hand is probably large enough to cause transition from laminar to turbulent flow ahead of the position of maximum velocity.

Since the airfoil designations are considered temporary there is no slope given to locate the center of the leading edge arc.—**Robert L. Brown**

Reference

Tetervin, N.: Tests in the NACA Two - Dimensional Low - Turbulence Tunnel of Airfoil Sections Designed to Have Small Pitching Moments and High Lift-Drag Ratios. NACA Wartime Report L-452.

Wage-Hour Changes

Two changes in the federal wage-hour law of special concern to the aircraft industry have been recommended by the Aircraft Industries Association to the Senate Labor subcommittee conducting hearings on amendments to the 10-year-old law. Industry views were given the committee by Edward J. Cresswell, counsel for Glenn L. Martin Co. He urged that:

1. The law exclude supervisors and exempt those administrative and professional employes earning more than $300 a month. (A bill introduced by Sen. Joseph H. Ball R., Minn., chairman of the subcommittee, would exempt all salaried employes earning $100 a week.)
2. "Regular rate of pay" be defined so as to exclude incentives, bonuses and other premiums from the rate on which time and a half must be paid after 40 hours a week.

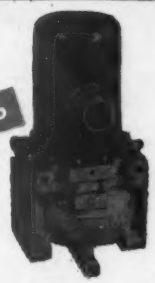
Aircraft wages are far above the 60-cent hourly minimum proposed in Ball's bill. On recommendation of industry committees, however, the Ball measure would permit flexibility in the minimum between 50 and 70 cents an hour.

Stock Bonus Approved

Lockheed Aircraft Corp. stockholders have approved the management proposal for making available 100,000 shares of common stock on option to key officials.

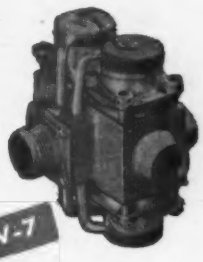
It is reported that about 800,000 shares or less than 80 percent of the total outstanding stock was represented. Of this, 672,000 shares voted for the management, about 56,000 shares were opposed to the proposal.

SPECIFY GENERAL CONTROLS
hi-g* valves for aircraft
AUTOMATIC PRESSURE, TEMPERATURE AND FLOW CONTROLS


AV-16
Electric motor valve, suitable for fuel, hydraulic fluid and lubricating oil shut-off. High flows at low pressure drop, explosion-proof motor and switch cover.

AV-11
3-way Electro-Magnetic valve used for distribution of fluid flow or for "feed in" and "exhausting" fluid from a cylinder, piston or vessel.

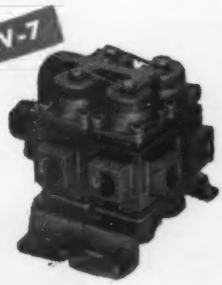
AV-2
Same as AV-1 except is normally open type. For control of various fluids, oil, water, gasoline, air, etc.


AV-7
Four-way selector type control—operating pressure up to 3000 P.S.I. for control of fluid pressure operated cylinders.

AV-9
Electro-Magnetic valve for medium and high pressure applications. Controls hydraulic oils, fuels, lubricating oils, water, etc. 50 P.S.I. to 3000 P.S.I. operating pressure.

TM-11
Temperature modulating control—providing fully automatic electro-hydraulic operation for control of engine coolant and lubricating oil.

AV-1
Normally closed type Electro-Magnetic valve—for control of all types of fluid, gasoline, air, water, hydraulic fluids or oils, anti-icing fluids, etc.


AV-7
Electro-Magnetic Double-Four Way selector type valve for control of fluid pressure operated cylinders.

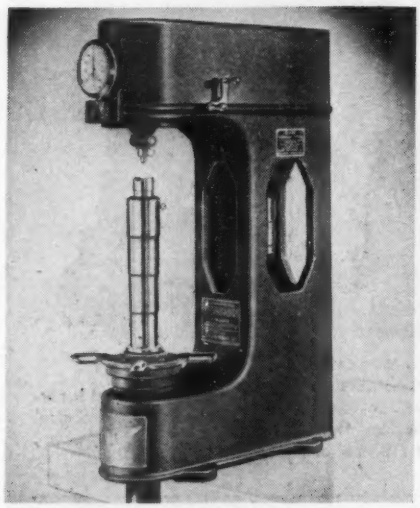
AV-1
Electro-Magnetic type valves with various magnet sizes, full ported or restricted ports, for all types of fluid, gasoline, air, water, oils, etc.

For complete specifications and engineering data, request new Catalog.

*hi-g TRADEMARK 36-2

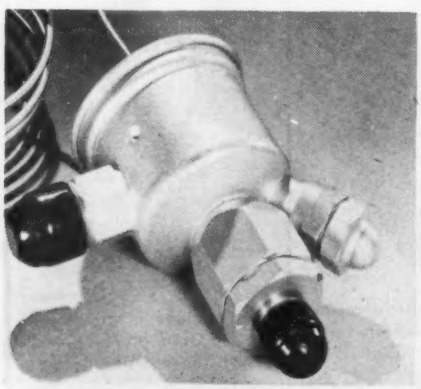
GENERAL CONTROLS
Manufacturers of Automatic Pressure, Temperature & Flow Controls
FACTORY BRANCHES: BIRMINGHAM (3), BOSTON (16), CHICAGO (5), CLEVELAND (15), DALLAS (2), DENVER (10), DETROIT (8), GLENDALE (1), HOUSTON (2), KANSAS CITY (2), NEW YORK (17), PHILADELPHIA (40) PITTSBURGH (22), SAN FRANCISCO (7), SEATTLE (1) • DISTRIBUTORS IN PRINCIPAL CITIES

NEW AVIATION PRODUCTS



For Surface Testing

Superficial hardness tester, for Rockwell gaging, is offered by **Clark Instrument, Inc.**, 10200 Ford Rd., Dearborn, Mich., for surfaces which must not be marred. Depth of penetration is held to limits of .005 in. or less. Device is claimed suitable for surface-hardened steel, exceptionally thin metals, rolled sheet metal, or very small areas. It is also stated to be adaptable for standard Rockwell testing of metals that are of uniform hardness throughout, or wherever test of surface hardness only is wanted. Tester is available in 8, 12, or 16-in. vertical capacity.

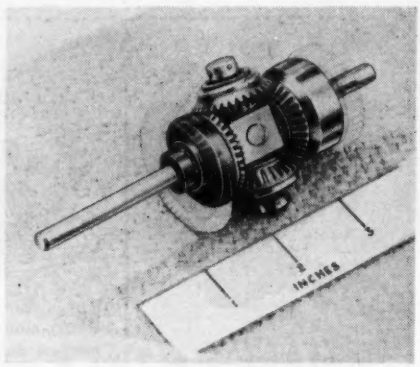


Protective Cap

To safeguard control devices in storage or shipment, melt-coated "Tenite" is offered by **Presstite Engineering Co.**, 3900 Chouteau Ave., St. Louis, Mo. Device comprises waterproof, flexible film for covering male nipples of valve inlets and outlets with forced fit, excluding foreign matter and protecting threads.

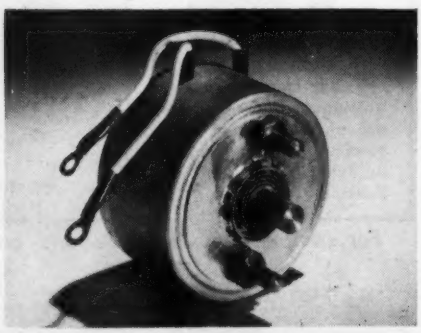
Tube Flarer

New "Hi-Duty" tool offered by **Imperial Brass Mfg. Co.**, 1200 W. Harrison St., Chicago, Ill., flares soft copper, brass, and aluminum tubing for S.A.E. joints in $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, and $\frac{5}{8}$ in. o.d. sizes. Device features die holder with sliding dies for tube clamping and one thumb screw at end. Friction is reduced through use of ball thrust bearing. Yoke slides directly over end of die holder without twisting or turning into position over tubing to be flared. Elimination of scoring is claimed possible by extra depth and smooth surface die blocks.



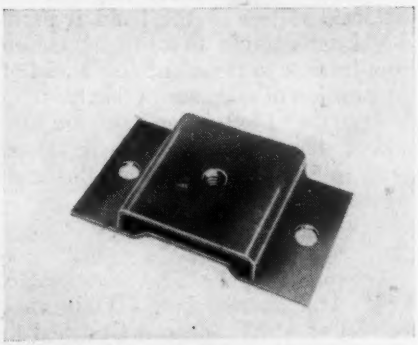
Mechanical Differentials

Of interest to aircraft manufacturers and designers requiring machine components to combine algebraically two mechanical quantities measured by angular displacement, is new line of mechanical differentials intended for high accuracy application. Maker is **Arma Corp.**, 254-36 St., Brooklyn 32, N. Y. Units are available in six sizes with shaft diameters from $\frac{1}{4}$ to $\frac{5}{8}$ in.



Compact Solenoids

New rotary solenoids are offered by **G. H. Leland, Inc.**, 105 Webster St., Dayton 2, Ohio. Ledex No. 7 is $2\frac{3}{4}$-in.-dia. unit, weighs $2\frac{1}{2}$ lb., and produces starting torque of 25 lb.-in. with 45-deg. rotary stroke. Ledex No. 8 is $3\frac{3}{8}$ in. in dia., weighs 4 lb., and develops 50 lb.-in. starting torque with 45-deg, rotary stroke. Wire sizes range from No. 13 to 35 for d.c. operation from 6 to 550v. Rectifiers are available for a.c.



Reduces Machine Vibration

Designed to control shock, isolate high frequency vibration, and reduce noise transmission on machines such as punch presses, etc., is heavy duty "Shockmount" made by **Lord Mfg. Co.**, Erie, Pa. Construction features $\frac{3}{16}$-in. steel, and load capacities range to 7500 lb. per mount. Top plate contour limits movement and sheds oil and dirt. Flexing element is oil-resistant synthetic rubber.

Information Tips

Oil-Grinding Manual

Revised edition for metal-working activities is 20-page catalog and handbook, "Grinding With Oil," offered by **D. A. Stuart Oil Co., 2727-33 S. Troy St., Chicago, Ill.** Included are data on selection of proper oils, grinding wheels, and wheel-marking systems, chart of standard wheel shapes, as well as tips for handling grinding oils.

Cost-Histories Folder

First of series of cost histories folders, titled "It Can Be Done," contains cases of manufacturers who are stated to have widened profit margin through use of improved tooling methods and machinery. Issued by **New Britain-Gridley Div. of New Britain Machine Co.**, New Britain, Conn., folder includes studies of multiple spindle chucking, screw machines, and precision boring equipment.

Stainless Steel Plates Data

Designed to supply information on selection and fabrication of stainless steel plates (solid and clad), whether used alone or in combination with each other, is 32-page booklet offered by **Allegheny Ludlum Steel Corp.**, Pittsburgh, Pa. Publication contains tables and charts showing available sizes, thicknesses, and weights; analysis selection; and information on shop work, cutting, machine, forming, welding, annealing, etc.

Fire-Fighting Equipment

Ansul Chemical Co., Marinette, Wisc., has issued 20-page catalog on its dry chemical fire extinguishers. Charts show characteristics of hand extinguishers and comparative effectiveness of units on flammable liquid fires. Pictures show action of dry chemical on flame.

FOR YOUR CONVENIENCE . . . A COMPLETE

SHERWIN-WILLIAMS COLOR LINE!

19 carefully selected colors—plus black and white—in the complete Sherwin-Williams Aircraft Color Line! And all of them are available in four types of finish: Opex Pigmented Nitrate Dope, Opex Pigmented Butyrate Dope, Opex High Gloss Lacquer, Kem Synthetic High Gloss Enamel.

Offering color matches for most aircraft manufacturers' standards, the colors in the Sherwin-Williams line have been chosen for their purity, richness, cleanness, brilliance . . . and outstanding durability. Pigments are pure struck colors, free from any tinting (except where hue is lightened by addition of white).

In addition to this comprehensive color line, Sherwin-Williams offers other finishes for every aircraft and airport requirement. The Sherwin-Williams Co., Aircraft Division, Cleveland 1, Ohio. (Export Division, Newark, N. J.)

Distributed by Pacific Airmotive Corporation

Products of Sherwin-Williams Industrial Research

SHERWIN-WILLIAMS
AIRCRAFT FINISHES

TEAMWORK

that licks the *toughest* sanding jobs — this SMOOTH COMBINATION

SIOUX RESIN BOND Abrasive Discs

Cut faster with less effort. They're flexible, tough, long lasting, non-loading, give maximum cutting action and remain cool. It's the ideal disc for any and all sanding operations

SIOUX High Speed Sanders

Ball-bearing construction, heat treated alloy steel gears, permanent lubrication. Cyclone fan for increased ventilation and patented tool spindle lock for changing discs. 3 Models: No. 1250—9" High Speed Heavy Duty; No. 1267—7" High Speed Heavy Duty and No. 1265—7" Special.

No. 1267 SIOUX Heavy Duty Sander (illustrated) No load speed 4250 R. P. M. Universal motor operates on A.C. or D.C. Overall length 15"—weight 13½ lbs. A very popular model.

Sold only through authorized SIOUX distributors

STANDARD THE WORLD OVER

ALBERTSON & CO., INC. SIOUX CITY, IOWA, U. S. A.

Omni-Receiver for Small Planes

CAA awards development contract to Narco with view to helping private owners use new radio ranges.

By Alexander McSurely

CAA has taken the first step toward solving a very serious problem for the private flyer: utilization of the new VHF omni-directional radio ranges. A CAA development contract has been awarded to National Aeronautical Corp., Ambler, Pa., for a small, and relatively low cost VHF radio navigation receiver for light airplanes.

▶ **Retail Price**—Contract provides for delivery of ten completed receivers in October at cost of $1970 each, which is aimed at covering part of the cost of design and development. However, the company has quantity production plans which will permit retail sale of the receivers for around $400, with an additional $100 for installation, antenna and taxes.

This price still seems high for the average pilot. However, sets will be sold in quantities to plane manufacturers planning to make standard equipment or optional equipment installations at "much lower than list price," CAA states. Lower wholesale prices also will be extended to any organization or individual who buys 10 or more receivers in a lot.

▶ **Available, January** — Receivers with power supply will weigh 15 lb., a weight which could be added even to small two-place planes without serious difficulty. Receivers are expected to be available to private flyers through Narco dealers and distributors by January, 1949, and possibly may be incorporated in some of the new 1949 model planes as optional equipment.

Advantage of the new "omni-receiver" is that it will permit the pilot to navigate visually using indications from the omni-directional radio ranges now being installed throughout the U.S. The airborne radio set also will receive VHF communications from the ground and the localizer indications of the CAA instrument landing system.

▶ **Accurate Fix**—By tuning in two omni-ranges the pilot will be able to obtain an accurate fix in a few seconds. It will not be necessary for him to listen continuously to the "A and N" signals from the present four-course low frequency ranges. Instead he will merely watch the indications on a vertical needle. There will be no more determining which quadrant he is in; he will be on course as long as he can pick up an omni-range.

Nearly 100 of the omni-ranges are now operating and the number is expected to be increased to 250 or 300 by Jan. 1, CAA states. By late 1949 400 omni-ranges are expected to be in operation, virtually blanketing the whole U. S. Each range sends a signal covering a radius of 50 to 60 miles.

▶ **Still in Operation**—The low-frequency ranges are to continue in operation until the omni-range installation is completed, CAA says, and until aircraft generally are equipped for VHF reception. Then the low frequency ranges will be discontinued.

Three top officials of Narco, James Riddle, president, and Rudy Garfield and A. R. Applegarth, vice-presidents, who have pioneered other personal flying radio equipment in the VHF field, reported that development is well along on the new receiver.

Narco is one of the newest aircraft radio companies, having organized two years ago to specialize on engineering development and sales. Narco laboratories collaborated in the development of the Hallicrafters Skyfone transceiver, and continues as national aviation representative for Hallicrafters.

▶ **Weather Reports**—In addition to the direction finding features of the omni-range receiver, the pilot will be able to hear weather reports and messages on the voice channel of the omni-range and will use the communications part of his receiver to pick up tower and communications stations operating in VHF channels.

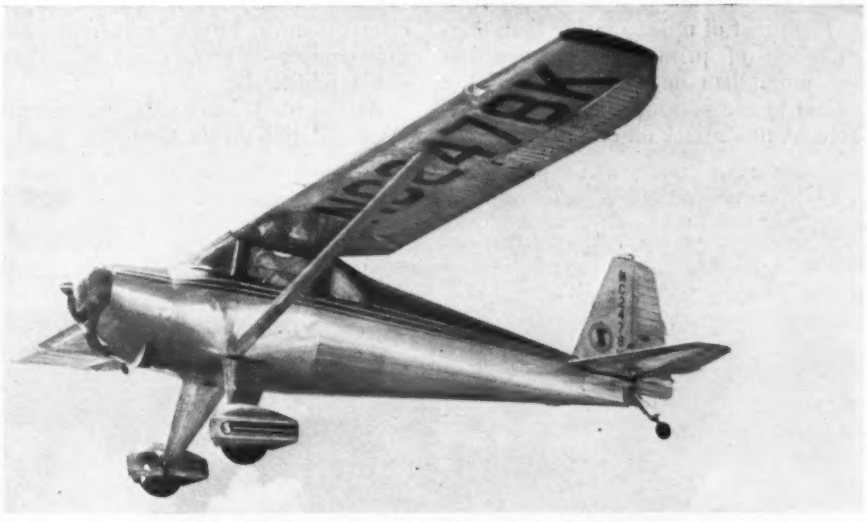
Phase-comparison localizer circuits will help to bring a pilot using the new receiver safely into any airport equipped with an instrument landing system of the new phase comparison type. A combination of the ILS and the receiver shows the pilot any variation of more than a few feet to the right or left of the proper approach to the runway.

▶ **Phase Comparison**—A few of the new ILS phase comparison type installations are under construction. International agreement provides that all new ILS installations after 1950 will be of phase comparison type, and eventually will replace the intensity comparison type ILS now in general use, CAA states.

Scheduled airlines anticipate using the omni-range equipment in regular service in approximately two years.

▶ **Serious Concern** — CAA switch to VHF and the new omni-range equipment has been the object of serious concern to private flyers since the end of World War II when plans for the change were first announced.

CAA has been made quite aware of this problem by the lightplane flyers. The Narco contract is the first tangible evidence of efforts to solve it.

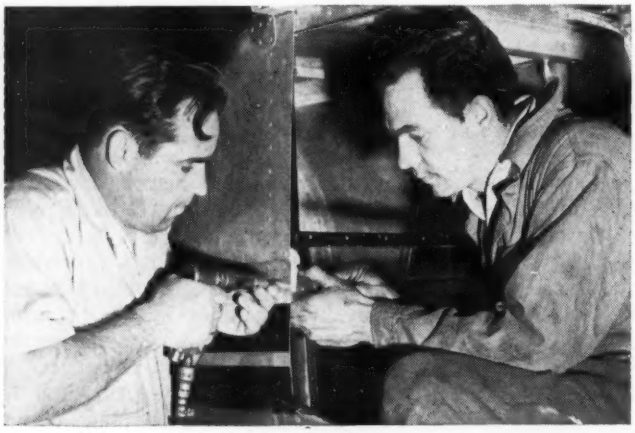


LUSCOMBE UNVEILS 1949 SILVAIRE

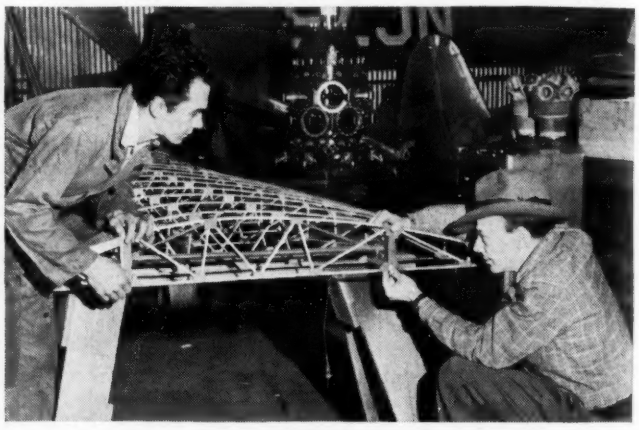
New 1949 Luscombe Silvaire Deluxe features restyled interior and redesigned vertical tail with a "square" rudder. The 90-hp. Continental engine is equipped with stainless steel muffler and improved cabin heating equipment. Interior incorporates Fiberglas soundproofing, foam rubber seat cushions and airline type ventilators.

FIRST STEP in the Self-Service station is to see what the customer wants. If the work will require a good deal of time, the aircraft, like the others shown in the background, will be parked and the owner will start work on his repairs.

BUT SOMETIMES it's only a soldering job. On jobs like this, Adams (left) makes no charge. "He'll come back," says Adams.



THOSE WHO DO come back have the assistance and advice of other owner Lou Stolp (right). This Luscombe was purchased even fuselage, wings and landing gear had to be repaired. Owner knew he could do it cheaply at the Self-Service station.



THE REPAIRS, such as complete recovering on the wing structure of a Funk "Bee" (above), are usually done on a flat rate basis. This owner is installing a rib spar as Stolp supervises the operation. Cost on this job including parts is about $200.

'Repair-Your-Own' Plan Offered Owners

High cost of upkeep rather than original cost of private plane ownership has more than once been labeled the villain in the personal aircraft sales picture. A new attack on one of the major elements in the upkeep cost—repair and maintenance—is being made by a West Coast partnership.

At the Stolp-Adams Co. Self-Service Repair Station on the Compton (Calif.) airport, the owner does his own work.

Lou Stolp and George Adams supply the tools and supervision. They sell parts at a good discount, and Adams, being a CAA designated aircraft inspector, is the finishing touch.

Originally, Adams and Stolp started business after the war as straight mechanics and maintenance men. When business didn't come and they were ready to close, they got their idea.

Says Stolp: "We saw some of these owners who had all their money tied up in a plane trying to do their own work. It was haphazard. They didn't know what they were doing most of the time. They'd make serious mistakes which would cost twice as much to rectify to get CAA approval.

And that is how the Stolp-Adams Co. Self-Service Repair Station came to be.

Most of the jobs are charged at a flat rate, The owner knows in advance what his repairs will cost. More extensive jobs are paid on a monthly basis.

WHEN IT'S ALL OVER, the pilot hands the repairs and alterations forms required by CAA to George Adams (left) and is ready to fly his plane away—with an actual cash saving for having done the work himself, at the Self-Service Repair Station.

Regatta Plan Tests Pilot Skill

A plan for competitive sport flying which actually tests the skill of the pilot and his ability to get the most out of his airplane in cross country flight is beginning to "catch on" in various parts of the country, following its introduction at Wings Field, Ambler, Pa.

Plans are being developed by the Philadelphia Aviation Country Club to sponsor a "National Air Regatta" for private flyers next October, under the same basic rules which have characterized the first two local air regattas held at Wings Field on May 31, and in October, 1947.

▶**Another**—Triangle Aviation, Stanton, Minn., has announced a similar regatta will be held for light planes July 18 at Carleton Airport, Stanton. The Philadelphia club reports interest in the regatta has been indicated from groups in other parts of the country who are considering similar local regattas preliminary to the national meet.

Competitions are in classes between planes of the same make and power and winners are selected on a point system depending half on speed and half on low fuel consumption.

The closed circuit course is announced shortly before the race starts. A crew of two, pilot and navigator, is carried in each plane. Tanks are filled before the race, and the race committee refills them after the race, thus determining the amount that was consumed in the race.

At the recent Memorial Day regatta at Ambler, five competitions were held over a 195 mile course. In the Twin Beech class with three planes finishing, Tom Taylor placed first, with average speed of 159.8 mph. and 39.9 gal. fuel consumption. George Pew won the Bonanza class with seven planes competing with 154.7 mph. and 9.2 gal. fuel consumption. Tony Smolenski took the Cessna 140 competition, also with seven competitors, with 100 mph. and 4.56 gal. James M. Riddle won the Bellanca competition with 133 mph. and 9.29 gal. and Alfred Wolf won the Stinson competition with 110.1 mph. and 7.84 gal., with five competitors finishing in each event. All winning entries come from the Philadelphia area.

The fuel consumption vs. speed method of scoring insures that each pilot will stay as closely on course as possible, and get the utmost out of his plane in miles per gallon, thereby encouraging more skillful piloting.

While not a competition directly between different makes of airplanes, the regatta system has some of the advantages of the European international touring contest for lightplanes, held for many years, prior to World War II.

BRIEFING FOR DEALERS & DISTRIBUTORS

BEECH BUSINESS FLEET—An impressive book of testimonials from owners of Beech Bonanzas and twin-engine Model 18 Beechcrafts whose letters put them on record variously as "satisfied," "happy" and frequently even "delighted" with the time saving, moderate expense, and all around utility of these airplanes in their business, has been compiled by Beech Aircraft Corp.

SEAPLANE CONVOCATION—Twenty-eight floatplanes and amphibians appeared at the first New England Seaplane Regatta at Lake Winnepesaukee, N. H. on the Memorial Day weekend. Under AOPA sponsorship, it was believed to be the largest gathering of civilian seaplanes ever assembled in the East.

DOLEITIS AND REGULATIONITIS—Col. A. B. McMullen, new executive secretary and Washington office manager of National Association of State Aviation Officials, reports he has traveled 20,000 miles in the last eight months observing aviation activities from coast to coast and from Canada to the Gulf. He concludes from his observations that civil aviation is very sick, suffering from doleitis and regulationitis and a lack of American aggressiveness, salesmanship and ingenuity.

He calls for an easing up on the regulations when and wherever possible, and assisting in getting industry out of the "Federal relief or bust" attitude.

McMullen, and Miss Doris Miller, his assistant, have offices at suite 302, 1101 Vermont Avenue, NW, Washington. The new secretary was formerly Florida Aeronautics Director, later headed CAA airports division, and served with the Air Force as head of the Miami Air Depot. Miss Miller has been active in Washington aviation public relations work with CAB, American Airlines, Feeder Airlines Association, and as editorial consultant to the President's Air Policy Commission and the Congressional Air Policy Board.

PROTESTS MEDICAL TIGHTENING—Aircraft Owners and Pilots Association (of which the new CAA Administrator Del Rentzel is a member) has filed a protest to CAA about a move by Dr. W. R. Stovall, CAA medical director, who wants to tighten up CAA physical requirements again for private pilots. AOPA reports that Stovall said the proposed restrictions were justified by "experience" in the GI flight program. AOPA made an independent investigation, found no evidence justifying the tightening up, and was joined in a vigorous protest by the National Association of State Aviation Officials.

Stovall has always fought liberalized medical regulations for private pilots bitterly, retreating step-by-step only when Administrator T. P. Wright approved the removal of the most obnoxious and unnecessary restrictions. Apparently since Wright's resignation, the CAA medical department is seeking to rebuild its empire at the cost of more regulations for personal flying.

CATA INSURANCE PLAN—California Aviation Trades Association is circulating a questionnaire among its membership preparatory to developing a group insurance plan, separating the members from all other types of aviation risks in a separate risk formula. None of the insurance companies with whom CATA is tentatively negotiating, are at present in aviation underwriting. They have indicated that if CATA carries out its aggressive planned program for reducing hazards among the fixed base operators who are its members, rates should be sharply reduced, possibly at the end of the first year in the form of a dividend.

TYPICAL NAVION OWNER—Ryan Aeronautical Co. has made a survey of approximately 1,000 Navion owners, and from their replies has drawn a composite figure of the typical Navion owner. He who sounds like a good customer for any plane manufacturer. This composite fellow, Ryan says, is a business or professional man in his early 40's. He has approximately 250 hr. of previous time in a two place plane which lacks the utility his business needs. He is a community leader, owns or has an interest in his business, and has an income of $10,000 to $25,000 a year. Of his flying, 85 percent is on business missions. Approximately 95 percent of the owners surveyed fly their own planes, and in case of many company-owned planes, two or more executives pilot the planes and other executives are being checked out. Twenty percent of the Navion owners currently own at least one other airplane. This group includes only a few airport operators, leading to the conclusion that the others purchased the Navion for its additional utility in spite of the fact that they did not or could not trade in their smaller plane. Approximately 92 percent of Navions sold were purchased for cash, only 8 percent on time credit arrangements. Registrations show 55 percent of the planes are in names of individuals while 45 percent of the Navions are in the name of business firms. —ALEXANDER McSURELY

Aircraft TOOLS

ANGLE DRILLS

FOR THOSE HARD-TO-REACH SPOTS
18 SIZES AND MODELS

Exclusive Thumb-Pad gives worker comfort and safety plus better tool control. Drive shafts and spindles are precision-built of heat-treated tool steel for long, trouble-free service. Lubrication of radial ball bearings and all parts simplified to one quick operation. Every tool factory tested and broken in.

AT-312
360° Flex Drive

AT-300
90° Direct Drive

AT-301
45° Direct Drive

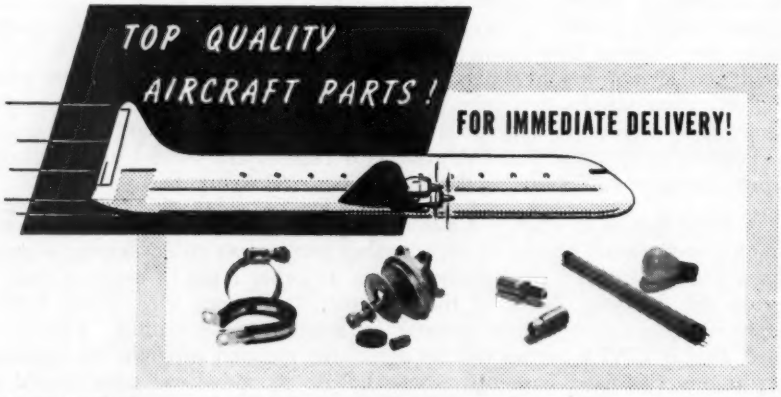
Aircraft TOOLS, INC.
2306 E. 38th Street, Los Angeles 11, Calif.

Manufacturers of all types of aircraft fabricating and maintenance tools.

Write Today For Catalog!

TOP QUALITY AIRCRAFT PARTS!

FOR IMMEDIATE DELIVERY!



WE CARRY A LARGE STOCK OF:

- HYDRAULIC AND AN FITTINGS
- DOUGLAS PARTS
- CLAMPS, BOLTS, NUTS AND SCREWS
- AIRCRAFT AND ENGINE ACCESSORIES
- PRATT AND WHITNEY PARTS

DISTRIBUTORS FOR: LORD AIRCRAFT AND INDUSTRIAL VIBRATION MOUNTS • WESTINGHOUSE LAMPS

the MOULTON COMPANY, inc.

CABLE ADDRESS: MOULTAIR

DISTRIBUTORS OF AVIATION SUPPLIES

SPECIALISTS in sale of excess materials for the airlines. For complete information and catalog, write The Moulton Company, Inc., dept. AW, 711 South Victory Blvd., Burbank, California.

BURBANK, CALIF. • OAKLAND, CALIF. • BALDWIN, NEW YORK

CAA to Compromise Copter "Violation"

CAA First Region, New York, has notified Robert Fischel, Washington helicopter operator, it will accept offers in compromise for the alleged violations of waivers in helicopter photographic work in Washington downtown areas in April (AVIATION WEEK, May 10).

Unless Fischel pays $250 and his pilot, Rowland Roelofs pays $50, CAA said, the case will be taken into court by the U. S. attorney. Fischel had not yet indicated whether he would fight the case in court, or pay the fine without contest.

▶ **Different Stories**—Al Koch, CAA assistant administrator in charge of safety regulation, said that the helicopter servive had been granted a waiver to fly over the restricted area which includes the White House, at 1000 ft. on April 18. According to Koch, there was no waiver granted for April 23, when the alleged offense took place. However Fischel has an official letter from the CAA inspector's office at Alexandria, Va., local office for safety regulation, extending the April 18 waiver until May 1.

Koch said the Bell Model 47B helicopter operated by Roelofs as a photographic platform for Luis Marden, National Geographic magazine color cameraman, was reported to have flown dangerously low near the Mayflower Hotel and to have "broken up" a ball game on the Washington mall by low flying.

▶ **What is Low?**—Crux of the matter appears to be a decision as to what constitutes dangerous low flying in a helicopter. Roelofs contends he was flying it with regard to safe landing in event of motor failure.

Koch says CAA is contending that Roelofs' flying was not such at all times that a safe emergency landing could be made.

Amendment to Civil Air Regulation Part 60, adopted last October, was designed to liberalize low flying requirements for helicopters in view of their special vertical, sideways and backward flight characteristics.

▶ **Could be Test**—Fischel's company, Roto Wings Air Service, Inc., has the choice either of being the guinea pig for a test case on what the regulation really means or of paying off a fine to CAA without a hearing.

The practice of CAA 'offers in compromise without hearings' have long been the subject of criticism in the aviation industry. Criticism is based on the fact that it makes it possible for bad regulatory decisions to be put over by default on pilots, mechanics, and operators, who elect not to defend the charges placed against them.

FINANCIAL

Aviation Pays for General Motors

Sale of North American stock brings auto company $10 million plus another $10 million in dividends.

The sale by General Motors Corp. of its stock interest in North American Aviation, Inc., completes another full cycle of the automotive company's highly profitable association with aviation.

This divestment leaves General Motors with its Allison Engine division as its sole major participation in the aviation industry. As Allison is wholly owned by G.M., no details of its activities are publicly available. It is known, however, that the Allison engine continues to occupy a very prominent part in the entire aircraft engine procurement program. There is reason to believe that this division is contributing to the earnings of its parent in a consistent and satisfactory fashion.

▶ **Policy Sale**—The sale of its interest in North American is in keeping with General Motors' recent policy of disposing of investments in companies not wholly owned and somewhat removed from its main functions.

This was the announced reason for the sale of its remaining minority interest in Bendix Aviation Corp. early this year. In January, General Motors sold 399,900 shares or 18.9 percent of the outstanding stock of Bendix for almost $12 million.

▶ **Profits**—The recent action by General Motors meant the complete liquidation of its 1,000,061 shares or 29.11 percent of the outstanding stock of North American Aviation. More than $10 million was realized in the operation. The profitable nature of this investment can readily be seen in a few figures.

At the end of 1938, General Motors carried its North American investment on its books at $4,510,611. Since that time, it has received more than $10 million in dividends alone. Hence, in a period of about ten years, General Motors has recovered more than four times the amount of its original investment in North American. This is the tangible, visible profit; there have been many other benefits of a collateral but intangible nature.

▶ **History**—Buried in the records is the account of General Motors initial entry into aviation back in 1929. At that time, the automotive combine rather timidly remarked in its annual report: "What the future of the airplane may be, no one can positively state at this time. Through this association General Motors will be able to evaluate the development of the industry and determine its future policies with a more definite knowledge of the facts."

General Motors has done well in aviation. It has made it pay. At all times, too, the automotive combine, by its aviation investments, had a form of insurance, a hedge against other industrial developments supplanting its main function. Its decision to leave the aircraft industry was made freely and not under the pressure of competitive factors.

▶ **Industry Leader**—As tabulated by the Civil Aeronautics Administration, the record of U. S. military aircraft acceptances during 1940-1945 reveals the major contribution made by North American in aircraft production. For this entire six-year period, North American delivered a total of 40,768 planes or 13.7 percent of the industry's total. As such it led the industry in number of planes delivered. In point of airframe weight delivered, North American ranked fourth with 293,415,000 pounds or 10.2 percent of the industry's total.

The company's leading position is revealed by the Mar. 31, 1948, backlog of orders. At that time unfilled orders approximated $260 million, virtually all from the U. S. Government. Of this amount, about $196 million was represented by production contracts for P-82, FJ-1, B-45 and P-86 airplanes. A large portion of the work has been completed and was reflected in inventory of work in progress. The inventory of raw materials, supplies and work in process totaled $96,960,330 as of Mar. 31, 1948. This compared with $63,273,242 as of Sept. 30, 1947.

▶ **Wins Competition** — Recently, the company won the Air Force competition for a trainer airplane. The orders have not yet been awarded. It is known that North American has contracts for projects on the secret list and which are not publicly disclosed.

The sharp fluctuations experienced by the company in the postwar period are revealed by contrasting backlog figures. By Sept. 30, 1945, its estimated unfilled orders reached a low of about $36 million from that point they began to mount rapidly until the recent $260 million level was attained.

▶ **Attainments**—The ability to obtain such a sizable increase in bookings can be attributed to the company's engineering and research attainments. Under present government policy, private industry is advised of new airplane requirements, companies interested in competing for business under a given set of requirements prepare preliminary designs and submit these designs along with price quotations.

As a further basis for evaluation, the air service may award contracts to one or more firms for more detailed design work and certain tests. The designs of several companies may be selected for experimental construction, with future construction contracts dependent upon which experimental airplane is most successful.

▶ **Postwar Venture**—In its postwar operations, North American also has had a major unprofitable venture in production of the Navion, a personal airplane. This project entailed a total loss of almost $8 million before it was discontinued in 1947.

Throughout its corporate existence, North American consistently has maintained a strong financial position. Despite dividend payments which are estimated to have aggregated more than $35 million in the past ten years, the company accumulated $33,268,418 in earned surplus from Dec. 31, 1934, to Mar. 31, 1948. Current book value per share is around $11.60. There are a total of 3,435,033 shares of common stock outstanding, representing the company's sole capitalization.

Much of the success of North American Aviation, in the popular mind, has been attributed to its association with General Motors management. The fact remains, however, that the North American management has had a personality very much of its own. That condition remains undisturbed with the departure of the General Motors financial interest.

—Selig Altschul

C-W Reports

Curtiss-Wright Corp. has reported a net profit after taxes of $1,340,068 for the three months ended March 31 on sales totaling $23,458,379.

Bulk of the profit, $824,637, was due to Wright Aeronautical Corp., C-W's engine subsidiary, which had sales for the period of $11,803,528.

C-W does not report backlog for its operating components, but listed the corporation-wide business on its books at $140,500,000, compared to $118,500,000 as of Dec. 31, 1947. Much of this business has been carried for some months, but only recently was announced.

AIR TRANSPORT

Success Near for Air Parcel Post

Senate passes, House committee reports out similar bills which give air parcel post to certificated lines.

The move to establish a domestic air parcel post system was on the verge of success last week.

Overwhelming support for legislation underwriting the new operations developed in Congress after Post Office officials stamped it as the only feasible method of narrowing the Department's large deficit on air services. Certificated airlines, which will handle all air parcel post under the bill introduced by Sen. William Langer (R., N. D.), would receive a large volume of new traffic, but most carriers will derive comparatively little additional direct revenue.

▶ **Unanimous Approval**—The Langer bill has already received unanimous Senate approval, and a similar measure has been endorsed unanimously by the House Post Office and Civil Service Committee. In reporting out the bill, Rep. Edward Rees (R., Kans.), chairman of the House group, said in excess of 19,000,000 ton miles of airplane space now is being paid for by the Post Office but is not being utilized. He estimated that air parcel post will reduce the Department's deficit for air services by $10,000,000 annually.

While some airlines may not experience a major increase in revenues as a result of air parcel post, other advantages are indicated. Congressional outbursts against the high level of airmail subsidy payments are likely to subside, and rate increases may not be as vigorously opposed as they were before.

▶ **Advantages Listed**—By restricting air parcel post business to the certificated airlines Post Office officials said the Langer measure will:

(1) Enable the Department to utilize space at little or no additional cost on lines now carrying mail on a plane mile basis. All the feederlines and five trunklines (Colonial, Continental, Inland, Mid-Continent and Northeast) could be called upon to handle the new parcel post business under existing airmail payments.

(2) Permit the government to obtain maximum benefit from four trunklines (Chicago & Southern, Capital, National and Western) carrying mail with a minimum capacity factor. Under this formula, the carriers are paid on a ton-mile basis for a designated minimum load whether or not this volume is actually handled.

▶ **"Phantom Loads"**—With air parcel post, this "phantom" load, representing the difference between the airmail volume carried and the volume paid for, would be reduced. Braniff and Delta, still on a straight ton-mile mail rate, would increase their revenue directly in proportion to increased volume resulting from air parcel post.

(3) Allow the government to obtain greater value from the sliding-scale mail rates set for the big five trunklines (American, Eastern, Northwest, TWA and United). With traffic increased by parcel post loads, a greater portion of mail would be carried under low rates paid carriers for large volume, resulting in a lower over-all average tonnage cost to the Department.

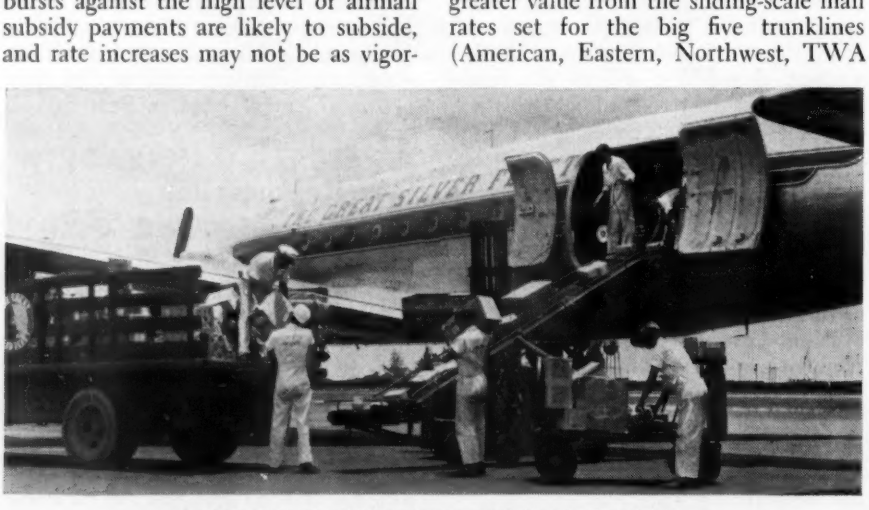
▶ **Independents Lose**—The House Post Office and Civil Service Committee endorsed the Langer measure despite the fact it had earlier plumped for opening parcel post business to independent airfreight carriers by directing the Post Office to let contracts for service on a competitive bid basis.

"We were on the spot," Chairman Rees of the House group explained to AVIATION WEEK. "It was a case of lowering government air postal deficits by letting parcel post business bail out airmail business or of risking increased deficits for the coming year for airmail service, and possibly also a deficit for parcel post operations. Reducing the government deficit for postal air services is our major concern."

Enactment of the Langer bill, Rees continued, will result in an overall reduction in the cost of air postal services—airmail and parcel post—to "about 40 cents" a ton mile. This compares with the average of 68 cents per ton mile paid by the Department to the 16 trunklines for airmail service in 1947, and the average $23.49 per ton mile paid to the feederlines.

▶ **Volume Estimated**—The Congressional Aviation Policy Board estimated that air parcel post will reach a volume of 100,000,000 ton-miles during the first year of operation, or three times the current airmail volume of 33,000,000 ton miles. This appear unlikely, however, since the rates laid down in the Langer bill will make air parcel post competitive with surface parcel post only for business in which the time element is highly important. Typical Langer bill charges (substantially above the 15 cents to 25 cents per ton-mile rates independent airfreight operators have offered for government parcel post business) are:

- First and second zones—55 cents for the first pound; 4 cents for each additional pound. Surface parcel post rate is 9 cents for the first pound, 1.1 cents for each additional pound.
- Third zone—60 cents for the first pound; 8 cents for each additional pound. Surface rate is 10 cents for the first pound; 2 cents for each additional pound.
- Seventh zone—75 cents for the first pound; 45 cents for each additional pound. Surface rate is 15 cents for the first pound; 9 cents for each additional pound.
- Eighth zone—80 cents for the first pound; 65 cents for each additional pound. Surface rate is 16 cents for the first pound; 11 cents for each additional pound.



EASTERN EXPANDS CARGO FLEET

First of Eastern Air Lines' all-cargo DC-4s went into service last month to handle the carrier's growing freight and express traffic. Three other DC-4s are to be removed from passenger service for conversion to cargo use. Photo shows small packages being loaded by conveyor through the 7 by 6 ft. cargo door of EAL'S first DC-4 airfreighter.

PAA Paychecks

Salaries paid officers of Pan Am and Panagra in 1947 rise slightly.

Total compensation paid top officers of Pan American Airways and Panagra tilted upward slightly in 1947 compared with 1946, but the increases generally were small.

Juan Trippe was paid $20,000 as PAA president and $3050 as a director last year. The $23,050 total compared with $22,900 in 1946.

S. F. Pryor, vice president and assistant to Trippe, continued to rank first salary-wise among Pan American executives. He was paid $40,000 in direct and indirect compensation as a PAA officer in 1947 plus $2,250 as a director. In 1946 he was paid a total of $38,200.

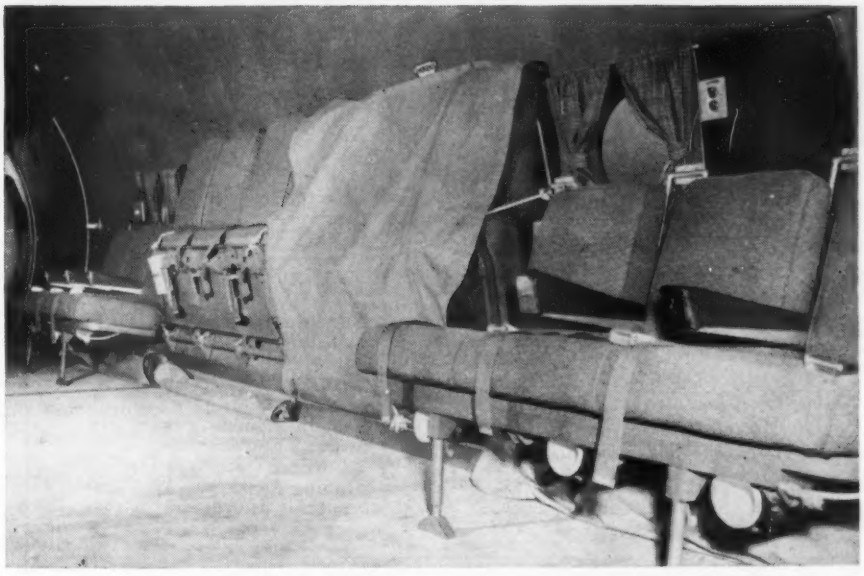
▶**Panagra Officials**—Panagra president Harold J. Roig and vice presidents R. H. Patchin and Howard B. Dean reported no compensation from the carrier in 1947. Douglas Campbell, Panagra's vice president and general manager, received $21,500 last year against $20,375 in 1946, while Gustavo Vidal, vice president and comptroller, earned $18,500 in 1947 against $17,375 in 1946.

Total compensation of other PAA and Panagra officials, including salaries, bonuses and indirect payments, follows. Parentheses indicate 1946 compensation.

▶**Pan American**—H. M. Bixby, vice president, $19,542 plus $1950 as director ($37,700); H. B. Dean, vice president, $37,500 plus $650 as director ($35,550); Franklin Gledhill, vice president, $34,500 plus $700 as director ($33,350); D. S. Ingalls, vice president, $29,992 ($29,098); Erwin Balluder, vice president, $26.000 ($24,000); H. J. Friendly, vice president and general counsel, $37,500 plus $550 as director ($34,250); J. C. Leslie, vice president, $29,500 ($26,833); J. C. Roop, vice president and treasurer, $25,000 ($22,000); A. A. Priester, vice president and chief engineer, $24,000 ($24,000); V. E. Chenea, vice president and general traffic manager, $15,000 ($24,000); W. G. Lipscomb, vice president-traffic and sales, $13,667; W. L. Morrison, vice president-Latin American Div., $31,000 ($31,000); J. H. Smith, Jr., vice president-Atlantic division, $23,000 ($18,332); Thomas Wolfe, vice president-Pacific-Alaska Div., $25,000 ($11,500).

W. L. Bond, vice president-Orient, $12,500; H. Preston Morris, secretary and general attorney, $16,500 ($15,501); J. S. Woodbridge, comptroller, $26,000 ($22,000); A. M. Archibald, assistant vice president and assistant secretary $12,500 ($15,001); J. C. Cone, assistant vice president, $18,000 ($19,000); W. J. McEvoy, assistant vice president, $14,500 ($15,501); H. H. Berke, assistant vice president, $16,500 ($15,200); J. O. Merckling, assistant comptroller, $13,500 ($15,501); Amos Hiatt, assistant comptroller, $14,500 ($16,000); R. G. Ferguson, assistant treasurer, $18,000 ($19,500); G. F. Fox, assistant secretary, $7500 ($4600); E. O. Rothrock, assistant secretary, $6250; J. J. Brucia, assistant secretary, $3573.

▶**Panagra**—T. J. Kirkland, vice president, $18,000; J. T. Shannon, vice president, $16,000; W. F. Cogswell, secretary, no compensation; J. S. Woodbridge, treasurer, no compensation; A. J. Phelan, assistant comptroller, $7500; E. E. Spencer, assistant treasurer, $8500; W. F. Lewis, assistant treasurer, $8000.



QUICK CHANGE ARTISTRY IN BRANIFF DC-4

Speedy conversion from a passenger transport to a cargoplane is possible in this Braniff Airways DC-4 which will augment the carrier's new DC-6 service to South America. Individual upholstered seats in the DC-4 can be folded against the sides of the craft to provide cargo space which is separated from the passenger section by curtains. The curtains can be moved to the rear of the plane as the cargo load increases. Carpeted floors are laid with transverse seams so that entire sections can be converted to cargo flooring in a few minutes. Reduced passenger rates will be available on the combination DC-4. Special interior arrangement of an Aerovias Brasil passenger-cargo DC-3 was illustrated in Aviation Week, Mar. 29.

Franco-British Merger?

(McGraw-Hill World News)

PARIS—Nothing definite has so far been decided about pooling French and British transport services on the South American run, according to spokesmen for Air France and the government's civil aviation secretariat. The proposal was made in London during Franco-British military aviation talks, which already have resulted in agreement that military planes of the two powers may land freely at fields in either country's territory.

Air France has not yet been approached on the subject of the commercial merger. Its South American run shows a profit, an official declared, though the hydroplane line to Martinique operates at a loss.

Fatal Accidents of 1948

Certificated Airlines—Domestic

Date	Location	Type Plane	Carrier	Fatalities Crew	Fatalities Passenger
Jan. 13	Oxon Hill, Md.	DC-3	Eastern	2	3
Feb. 7	Bunnell, Fla.	Constellation	Eastern	1	0
Mar. 10	Chicago, Ill.	DC-4	Delta	4	8
		Certificated Airlines—International			
Mar. 12	Mt. Sanford, Alas.	DC-4(Charter)	Northwest	6	26
Apr. 15	Shannon, Eire	Constellation	Pan American	10	20
		Uncertificated Airlines			
Jan. 7	Savannah, Ga.	DC-3	Costal Air Lines	1	16
Jan. 28	Coalinga, Calif.	DC-3	Airline Transport Carriers	3	29
Feb. 25	Fort Columbus, O.	DC-3	Bruning Airways	1	0
Mar. 8	San Jose, Calif.	DC-3	Eagle Air Freight	2	0
May 16	Port Columbus, O.	C-46	Slick Airways	2	0

Airlines' Safety Record Rewarded

National Safety Council fetes 24 for 1947 showing with best honors going to American and Northwest.

By Charles Adams

U. S. air transport's safety record is in the spotlight again.

The National Safety Council early this month honored 24 carriers for last year's achievements. At the same time, the airlines proudly exhibited an excellent record in the first five months of 1948.

Through June 1, the domestic airlines had put last year's performance far in the shade, although U. S. flag carriers apparently are headed for a less successful year safety-wise. By contrast, in 1947 the domestic operators as a group had their highest fatality rate since 1942, while U. S. flag lines made their best showing over a five-year period of time.

▶ **Billion-Mile Mark**—American Airlines and Northwest Airlines, which on Jan. 1, 1948, were well past the billion passenger mile mark since their last fatal accident, received top honors from the National Safety Council. Pan American Airways also was cited for having passed the billion passenger mile mark before its no-accident record ended last June.

The domestic airlines finished the first five months of 1948 with three fatal accidents involving 11 passengers and seven crew deaths. By June 1 last year, there also were three fatal crashes, but the death toll was 105 passengers and nine crewmen. And on June 13, 1947, a fourth accident involving a PCA DC-4 brought 50 more fatalities.

During the first five months of 1947 the domestic airlines experienced more than four fatalities for every 100,000,000 passenger miles flown. In the same period this year, there was less than one passenger fatality for every 200,000,000 passenger miles flown.

▶ **Delta Accident**—Worst domestic accident during the first part of 1948 was the Delta Air Lines DC-4 crash at Chicago, Mar. 10, when eight passengers and four crewmen were killed. Prior to that time, Delta had not experienced a fatal accident since Aug. 14, 1935.

Other fatal mishaps through the end of May were Eastern Air Lines' DC-3 crash at Oxon Hill, Md., Jan. 13, when three passengers and two crewmen were killed, and EAL's mishap near Bunnell, Fla., Feb. 7, when a Constellation crewman was killed by part of a propeller which was thrown through the fuselage.

Only one accident involving scheduled U. S. international flights took place through May 30—the crash of a Pan American Airways Constellation at Shannon, Eire, Apr. 15 with 20 passenger and 10 crew fatalities. The 20 passenger deaths equaled the number recorded all last year for scheduled U. S. overseas operations. Northwest Airlines' chartered DC-4 accident at Mt. Sanford, Alaska, Mar. 12 will not affect its record with the National Safety Council since only scheduled operations are considered by that body.

▶ **Traffic Slumps in 1947**—Domestic airline traffic officials—plagued by a five percent drop in passenger business during the first quarter of this year compared to 1947—readily admit matters would have been far worse had a series of severe accidents entered the picture. In 1947, three distinct traffic slumps were traced directly to highly publicized mishaps.

Uncertificated carriers' safety performance continues to lag far behind that of the regular airlines. Two accidents in January by uncertificated passenger carriers resulted in the death of 49 persons, including tour crewmen. In addition, cargo planes operated by Bruning Airways, Eagle Air Freight and Slick Airways crashed between Feb. 25 and May 16 with a total of five crewmen killed.

Among the 24 carriers receiving National Safety Council awards for 1947 were six feederlines. Despite the high frequency of landings and takeoffs necessitated by their operations, no certified feeder has yet suffered a fatal accident.

▶ **Awards Listed** — Carriers winning safety council awards for 1947 are shown below. Figures in parentheses indicate passenger miles flown (as of Jan. 1, 1948) since the last fatal accident, the date of which is given.

American (1,502,499,000) Dec. 28, 1946; American Overseas (206,385,000) Oct. 3, 1946, Braniff (900,125,000) Mar. 26, 1939; Caribbean-Atlantic (13,437,000) no fatal accidents since records were established with CAB in 1942; Chicago & Southern (546,763,000) Aug. 5, 1936; Colonial (180,997,000) Apr. 18, 1930; Continental (262,593,000) May 1, 1935; Delta (733,325,000) Aug. 14, 1935; Hawaiian (174,617,000) no fatal accidents since its establishment in 1929; Inland (101,304,000) no fatal accidents since records became available in 1931.

Mid-Continent (282,622,000) Nov. 15, 1934; National (368,500,000) Oct. 5, 1945; Northeast (244,558,000) no fatal accidents since its establishment in 1933; Northwest (1,228,604,000) May 12, 1942; Pan American (1,443,699,000) no fatal accidents between Aug. 3, 1945, and June 19, 1947; Panagra (413,754,000) Jan. 22, 1943; Uraba, Medellin & Central Airways (10,117,000) no fatal accidents since records were established in 1940; Western (174,332,000) Dec. 24, 1946.

Feederlines recognized for operating without a fatality since inauguration of their services were: Empire (3,491,000) starting September, 1946; Florida Airways (1,049,000) starting January, 1947; Monarch (4,872,000) starting November, 1946; Pioneer (25,727,000) starting August, 1945; Southwest (16,106,000) starting December, 1946; West Coast (5,220,000) starting with the month of December, 1946.

UAL Fears Heavy Loss in 1948

First-quarter reports indicate possible $3 million deficit unless traffic takes unexpected spurt.

A new appraisal of its 1948 outlook on the basis of first-quarter operations has given United Air Lines little cause for optimism.

Unless traffic takes an unanticipated spurt, the company's net operating loss this year is expected to exceed $3,100,000 on the basis of present mail pay. Such deficit operations might force the carrier to default on its preferred stock dividends and bank credit agreements and might prevent discharge of contractual commitments, officials declare.

▶**Forecast Made**—Actually, UAL believes its domestic passenger mileage in 1948 will be only three to four percent above 1947. It is on this estimate that a system-wide operational loss of around $3,100,000 is anticipated.

United showed a net loss of $3,550,534 during the first quarter of this year against a $3,450,671 red figure in the same period last year despite an increase in operating revenues and a drop in operating expenses. Major reason for the smaller net loss during the first three months of last year was a fat $1,921,000 carryback credit on federal income taxes—a sum which dwindled to $747,457 in the first quarter of 1948.

▶**Costs Drop**—As a result of economies, UAL's cost per revenue plane mile dropped from $1.34 in first-quarter 1947 to $1.30 in first-quarter 1948. Costs were shaved over 16 percent in the traffic-sales-advertising category, while general and administrative expenses were cut nearly 25 percent.

Despite a nine percent drop in passenger miles flown, United's passenger revenues gained 11 percent in first-quarter 1948 over the same 1947 period-reflecting the two 10 percent fare increases instituted last year. Airmail revenues were up over 23 percent with the aid of higher rates, although mail ton miles flown declined 12 percent. Freight revenues were up over 60 percent, the result of sharply higher volume.

▶**Mail Rate Issue**—The recent boost in United's temporary mail rate from 45 cents a ton mile to about 60 cents domestically and 75 cents on the Hawaiian route (retroactive to Jan. 1) yielded the carrier $349,836 in additional revenue during the first quarter. But the company considers this increase far from adequate and states it only accepted the new rate because of its critical financial condition.

UAL officials said an inadequate mail rate will either make equity financing impossible or lower the price otherwise obtainable for the stock sold. United's stockholders on Apr. 13 increased the company's authorized preferred stock from 94,968 to 300,000 shares and authorized common stock from 2,500,000-to 5,000,000 shares. The carrier has disclosed need for a large amount of additional capital which it hopes to obtain from the sale of part of this newly authorized capital stock.

▶**Long-Term View**—Because it has a mail rate insufficient to yield an overall profit, United feels it is handicapped in negotiating terms upon which equity financing can be based. It feels the adverse effect will be costly and permanent, and that "the mistake (in setting inadequate mail rates) cannot be cured by a subsequent adjustment high enough to permit the company to earn a reasonable profit."

United has told CAB it needs a systemwide temporary rate of at least 70.9 cents a ton mile retroactive to July 1, 1947, or 91.7 cents effective Jan. 1, 1948. Even at these rates the carrier said it would probably experience substantial losses this year, but this level would prevent defaults on obligations.

▶**Reply to Criticism**—Meanwhile, UAL officials are smarting under criticism directed their way in CAB's "big five" mail rate opinion (AVIATION WEEK, Apr. 19) which set the current scale of payments. United protested that the Board for the first time in its history inferentially charged air carriers with inefficiency in management without giving supporting proof.

In denying the "big five" carriers increased mail pay prior to Jan. 1, 1948, CAB indicated that management decisions were primarily responsible for the difference between Eastern Air Lines' substantial profits during 1947 and the deficits shown by American, United, TWA and Northwest. The Board said the latter four carriers were in an even more favorable position than Eastern to earn profits, and if they didn't their stockholders "should properly hold management responsible."

PERSONAL SERVICE

As the only passenger aboard a Pan American Airways DC-4 leaving La Guardia Field recently bound for Buenos Aires, Mrs. Branda Wajchandler (center) of Sao Paulo, Brazil, rated the undivided attention of two hostesses. Other space on the plane was taken up by 10,391 lb. of cargo destined for Sao Paulo, Porto Alegre and Rio de Janeiro. Half of the DC-4's seats were removed to make room for the shipment, which included furs, fountain pens, film, nylon stockings and flashlights. The rush of air cargo to Brazil was attributed to that country's new import license law.

REPUBLIC P-84
Thunderjet
STAINLESS STEEL
NOSE COWL
FORMED BY *Mecatorn
PROCESS

Photo Courtesy Republic Aviation Corp.

Out in front in the AAF's stable of jet fighters is Republic's P-84 "Thunderjet". And on the front of the "Thunderjet" is the rugged, stainless steel air intake cowl formed by *Mecatorn!

A difficult job at best when formed by dies, this piece is readily shaped at the C. W. Torngren Co. plant, using special equipment and new techniques. And the development and testing of the heart of the plane — the G.E. TG-180 turbojet engine — was materially assisted by turning to *Mecatorn for some of the difficult and exacting stainless steel pieces used in the engine.

If your problem is one involving the forming of stainless steel or aluminum parts for aircraft or jet engine designs, consider the possibilities of *Mecatorn. Write for details.

*Mecatorn
is a registered
trade name of

C. W. TORNGREN CO.
115 Skilton Ave.
Somerville 45, Mass.

Early Decision?

CAB has completed oral argument in important freight forwarder case.

Expedited decision on one of CAB's most important cargo proceedings was indicated when the Board recently completed oral argument in the freight forwarder case.

Sharp exchanges between the certificated airlines on the one hand and the all-cargo carriers, forwarders and Railway Express Agency on the other marked the oral argument. Special target of attack was Air Cargo, Inc., the regular airlines' cooperative ground service organization, which was accused of spending large sums of money with little evidence of accomplishment. One forwarder described Air Cargo, Inc., as a "ghost," and another called it "the mystery organization of aviation" which has failed to live up to impressive advance notices.

▶**Deny Being Parasites**—The forwarders denied intimations that their services are of "parasitic" nature. They declared they had developed large volumes of new business in the past for both certificated and uncertificated airlines. "Only high policy men in the certificated airlines oppose granting us authority to operate under a CAB exemption or certificate, while the cargo men on the working level in the same carriers favor our services," one forwarder stated.

An Air Transport Association representative said certification or exemption of forwarders would only serve to reduce the speed and frequency of air cargo service and increase costs to the public. Also opposing the forwarders as unnecessary "middle-men" were American Airlines, Eastern Air Lines, Capital Airlines, United Air Lines and TWA.

▶**REA Agreement** — The certificated lines denied they want to eliminate Railway Express Agency from the air transportation picture completely. But they reiterated dissatisfaction with the present contract whereby REA is guaranteed 12½ percent of the profits on air express plus compensation for all its expenses in furnishing this type of service.

Fear that over 50 percent of the air express business would be diverted from them if REA were granted authority to do business with the all-cargo carriers was expressed by one certificated airline. Others emphasized that all air express revenue is vitally needed at this time.

MAINTENANCE PACT

Signing of a maintenance contract with Grumman Aircraft Engineering Corp. covering planes used in trans-Atlantic service has been announced by Scandinavian Airlines System. At present, SAS uses DC-4s on its overseas run, but they will be replaced gradually by DC-6s with sleeping accommodations. DC-6s have already been delivered to SAS via the Grumman maintenance base at Plant No. 4, Bethpage, Long Island, N. Y. Col. M. J. Maidel, SAS regional vice president-operations, is shown signing the contract as Grumman President L. A. Swirbul watches.

Landing Rights Denied

(McGraw-Hill World News)

MELBOURNE — British Commonwealth Pacific Airlines deadlocked Pan American's efforts to extend its service to Melbourne by taking over Australia National Airlines' Sydney-Vancouver route.

The Commonwealth Department of Civil Aviation bases its refusal to let PAA land at Melbourne on a clause in the annex to the U. S.-Australian air pact, under which any U. S.-designated airline would be permitted to extend its service to Melbourne if any non-American trans-Pacific airline was accorded the same privilege.

Although ANA, which operated the trans-Pacific service under charter, did continue to Melbourne, BCPA does not intend to do so. Hence, the department's refusal to extend the privilege to PAA.

TWA Finance Group

TWA's board of directors has appointed a special committee to study all phases of the company's finances. The group is composed of Warren Lee Pierson, board chairman, Noah Dietrich, A. B. Eisenhower, A. V. Leslie, Sidney Maestre and A. D. Simpson.

ICAO Paris Meeting Makes Rule Changes

(*McGraw-Hill World News*)

PARIS—Results of the second North Atlantic regional conference of ICAO in Paris have generally satisfied the American delegates.

The two-week conference dealt with technical problems of air traffic control, communications, search and rescue, meteorology, and ICAO manuals. With some exceptions, the U. S. viewpoint on questions raised was generally accepted.

▶ **Changes**—Several changes were made in control rules for planes over the Atlantic to insure their flying at different levels. The zone system of controls was abandoned over the ocean, and instead all planes further than 100 miles from shore will operate with altimeters set at the standard reading of 29.92 inches. Flight channels in the ocean area will have a bottom of 2000 ft. Within the 100-mile radius from shore, altimeters will be changed to local readings, and flight channels will operate with 700 ft. bottom. All international regular and alternate aerodromes will establish their own control zones.

In communications, the present loran system will be continued until some agreement can be reached on a single system of long-distance radio aids. Installation of control stations in Iceland, the Azores and Newfoundland was recommended, though Portugal objected.

▶ **Adequate**—Search and rescue facilities were regarded as adequate. It was urged that the ocean station vessel program be hurried up.

In the meteorological field the conference reached wide agreement on a network of weather stations, including the program for 13 weather ships, and on means and procedures for operation.

Recommendations in the first three fields are to be implemented by Oct. 1, 1948, and in the meteorology field by Jan. 1, 1949.

▶ **Results Fruitful**—Just prior to the North Atlantic meeting a similar conference for the European-Mediterranean region was held. Here also the technical results are felt to have been fruitful, though no major modifications developed. In this region altimeter readings are to be given in millibars rather than inches, which will require an additional calculation by inter-continental navigators.

The 20-man U. S. delegation attended both meetings and was headed by C. P. Burton of the CAA. Denmark, France, Ireland, Canada, Iceland, Mexico, the Netherlands, Norway, Portugal, Sweden, the United Kingdom in addition to the U. S. were represented at the North Atlantic meeting.

All-Expense Air Tours

Resort Airlines, Pinehurst, N. C., has received special authorization from CAB to conduct its summer schedule of all-expense vacation tours.

The flights, which are slated to start this month, will originate at New York and pick up and discharge traffic at Chicago and Cleveland. Sightseeing stops will include two or more of the following points: Denver, Colorado Springs, Carlsbad, N. M.; Grand Canyon, Ariz.; Los Angeles, Fresno, Merced and San Francisco, Calif.; Reno, Salt Lake City, West Yellowstone, Mont., Rapid City, S. D., and Madison, Wis. Only roundtrip transportation is sold on the all-expense tours, and no local traffic will be carried.

Resort is authorized to make eight flights between June and September. Special permission was sought from CAB because advertising, scheduling and frequency of the trips might have violated provisions of the nonscheduled exemption. The carrier has been operating all-expense air tours since the summer of 1946 and is pressing an application for a certificate.

More Overseas Flights

TWA is stepping up its trans-Atlantic passenger schedules from 17 to 22 roundtrips weekly beginning June 15 in order to handle peak summer business. The increased service is being made possible by introduction of seven of the 12 sleeper-type Constellations which TWA ordered from Lockheed earlier this year.

With traffic to Europe expected to set new records, the carrier also plans to operate 26 extra sections between June 15 and the end of August.

CAB SCHEDULE

June 17—Oral argument on reopened portion of Mississippi Valley area case dealing with selection of carrier on Kansas City-St. Louis route. (Docket 548, et al.)

June 21—Resumption of hearing on suspension of All American Aviation's pickup route certificate. (Dockets 2918 and 3293.)

June 22—Hearing on PCA-National equipment interchange agreement. (Docket 3291.)

June 28—Hearing on Pan American Airways' Pacific certificate amendment case. (Docket 2953, et al.)

June 30—Hearing on Board's investigation of Pan American Airways' Miami-St. Thomas tariffs. (Docket 3274.)

July 12—Hearing on National Airlines route consolidation case. (Docket 2967.)

Picture Credits

Acme—13; Tom W. Collins—37; McGraw-Hill World News—19; Ross-Pix—38.

Specify DELTABESTON* for...

PLUS 3 WORKING EXTRAS

To make them right for continuous service at high temperatures, Deltabeston aircraft wires are made to meet every lighting and power need. Basic insulating material is a tough synthetic resin that resists moisture, corrosive vapors, and flame. This special resin with cotton braid makes a tough, compact wire. Combined with asbestos and covered with cotton or rayon braid, it takes extra-high heat, plenty of abuse. Choose from several Deltabeston types for long life, for workability — because they're FLEXIBLE, COMPACT, TOUGH.

FLEXIBLE — Because of their special resin insulation, Deltabeston aircraft wires need no bulky insulation to beat the heat. They're flexible for easy installation — extra workability.

COMPACT — The compact insulation on Deltabeston aircraft wires makes them fit easily even in the most cramped quarters.

TOUGH — Special resin, felted asbestos, and tough braid make Deltabeston aircraft wire unusually resistant to abrasion and other abusive conditions during installation and service.

Deltabeston aircraft wires — in sizes 22 to 2/0 — are ready to go to work on your heat problems now. Specify them wherever heat's a threat. For further information, write to Section Y12-692, General Electric Company, Bridgeport 2, Conn.

Deltabeston aircraft wires are manufactured only by General Electric, makers of the famous *triple-silicone-treated* Deltabeston aircraft wires.

*TRADE-MARK REG. U. S. PAT. OFF.

Deltabeston
AIRCRAFT WIRE
Built to beat the heat

GENERAL ELECTRIC

Lavelle

Stainless Steel Assemblies

AMMUNITION BOXES & CHUTES
BAFFLES & DEFLECTORS
GALLEY EQUIPMENT
RADAR REFLECTORS
JET COMPONENTS
MUFFS & SHIELDS
FIRE WALLS
TAIL PIPES

WITH over 25 years of experience, the name Lavelle stands for engineering skill and precision in the manufacture of stainless steel and aluminum alloy products requiring the application of technical knowledge exacting control, and highly trained personnel.

Tool design, research and engineering consultation are available for the development of new projects.

EXPERIENCE + PRECISION FOR Aircraft. Airlines. Electronic Manufacturers

LAVELLE AIRCRAFT CORPORATION
NEWTOWN, Bucks County, PENNA.

FLIERS' FIRST CHOICE..

CONTINENTAL
Red Seal
ENGINES

Continental engines in the 65 to 185 h. p. range provide reliable power for the great majority of all personal planes.

Continental Motors Corporation
AIRCRAFT ENGINE DIV. MUSKEGON, MICH.

No Early End To NAL Strike

All prospects of early termination of the National Airlines pilot strike evaporated early this month when President Truman's emergency fact finding board adjourned its sessions until June 21 in order to widen the scope of the proceedings.

Under a new Presidential order, the emergency board was recreated to extend the inquiry to the International Association of Machinists. IAM members struck National shortly before the company pilots walked out to strike Feb. 3.

► **Report Deferred**—Life of the emergency board has been extended to July 3, and the panel's report to the President on the two disputes probably will not be made before that time. Meanwhile, the status quo between the carrier and its employes is expected to continue. There are still no indications that National will take back its ALPA pilots even if this move is recommended by the emergency board.

Attempts of the emergency board to mediate the NAL-ALPA dispute after listening to the cases presented by both parties resulted in quick failure. The union pilots have offered to go back to work under conditions existing on Feb. 3.

► **Widening Strike**—During testimony, National failed to get into the record the letter ALPA President David L. Behncke wrote President Truman indicating the likelihood that the strike would spread unless emergency action was taken. ALPA said that if it chose to respect NAL picket lines at Miami, Washington, Newark, New Orleans and Jacksonville, 510 flights daily operated by other carriers to these points could be tied up (with the assistance of other American Federation of Labor unions). Other lines which would be affected include American, Delta, Eastern, Capital, Pan American, Northwest, Colonial, TWA, United, Mid-Continent and Chicago & Southern.

Airline Flexibility

Flexibility of air transport operations in an emergency, in contrast to the permanent character of surface transport facilities, was demonstrated during the Portland (Ore.) flood disaster.

Commercial flying operations ceased at Portland, Ore., during the Columbia River flood period and Portland Airport was closed.

United Air Lines moved its operations to McNary Field, Salem 50 miles distant. Its planes were operated in and out of Salem on the Portland schedule, and passengers were transported to and from Portland by bus and company limousines.

Western Air Lines also moved its equipment to Salem, operating buses from its downtown Portland office to the Salem field.

Northwest Airlines moved its operating headquarters to McMinnville.

'OLD MACK' PERFORMS FOR CONTINENTAL

Advent of the Convair-Liner, with its more powerful engines, has brought "Old Mack," Continental Air Lines' portable test stand truck, to the end of the road at Stapleton Field, Denver. Reputedly of pre-World War I vintage, the vehicle will be returned to the scrap heap and be replaced by a permanent testing building. "Old Mack" was purchased by Continental from a Denver junk dealer in 1940 for $25 and is now considered fully depreciated. Engine test instruments are in the cab of the vehicle. During the past eight years the Mack truck has tested 600 engines and has traveled more than 1000 miles for duty at remote corners of Stapleton Field.

SHORTLINES

▶ **Capital**—Will inaugurate service into Reading and Philadelphia, Pa., some time after July 15. Philadelphia will serve as a terminal point on the link operated south from Buffalo and Williamsport, with Reading as an intermediate step.

▶ **Delta**—Through plane service between Detroit and New Orleans under Delta's equipment interchange agreement with TWA has been deferred pending a CAB hearing. One plane TWA-Delta service between Detroit and Atlanta was inaugurated June 1, but Chicago & Southern Air Lines protested the proposed Detroit-New Orleans operation.

▶ **Eastern**—Inauguration of service to Rome and Waycross, Ga., is scheduled around July 1. Flights to Augusta, Ga., began June 1.

▶ **Empire**—CAB has placed in effect new temporary mail rates which will add around $44,800 to the feeder's mail compensation between September, 1946, and the end of 1947 and increase 1948 payments by about $90,800 (AVIATION WEEK, May 17).

▶ **Mid-Continent**—Reports $3021 net profits in April against 6535 net loss in the same month last year. Operating revenues were 32 percent above April, 1947, although the passenger load factor dropped from 62.7 percent to 59 percent. Expenses were up 28 percent over April, 1947, but the cost per revenue mile dropped from 87.6 cents to 85.1 cents. Revenue passenger miles flown totaled 13,178,826 in April, 1948, against 10,047,335 in April, 1947.

▶ **National**—Increased service at nine cities on June 1 with the addition of six new flights.

▶ **Northwest**—Winner of the "Name of Fleet" contest has suggested calling NWA's Martin 2-0-2s "Aro Liners." With 14 2-0-2s in operation, Northwest was slated to extend its service with this type craft to the West Coast the first week in June.

▶ **Pacific International Airways**—Has requested a CAB certificate to operate from Los Angeles to Shanghai, Los Angeles to Seattle and Seattle to New Orleans. Company is based at Lockheed Air Terminal, Burbank, Calif. T. D. Harvey is executive vice president.

▶ **Seaboard & Western**—Planned to institute special commodity rates for flying unaccompanied trunks and other heavy baggage between New York and European points effective June 1. Service offers alternative to the air traveler who is forced to ship his trunks weeks ahead by boat in order to have them on hand when needed.

Arnold Stall Warning

SURE, SAFE, SIMPLE!

DIRECT SIGNAL — warning is signalled from detector units mounted on trailing edge of wing, so that it originates from stall itself and not from a related effect such as change in attack angle of wing. DOUBLE RELIABILITY—detector units mounted on trailing edge of both left and right wing panels where they can't ice up, buzzer and light in cockpit signal dual alarm. SIMPLE—detectors mount on wing surface. No extensive cutting, no interference with boots or de-icing equipment. SAFE—detectors are outside wing, proof against fuel vapors. COMPACT—detectors measure only 1"x1¼"x3⅜", weigh less than 3 oz. ea. Warning indicator may be mounted in or above panel. PROVEN—now in operation on Luscombe, Cessna, Swift, Navion, Seabee, Grumman Widgeon, and many other craft. LOW COST—only **$36.00** for complete kit including two detector units, cockpit indicator and all necessary wiring. Write for illustrated folder of facts.

GORDONAY PRODUCTS COMPANY
2026 Beach St., Flint 3, Michigan

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • PLANES • EQUIPMENT—USED or RESALE

New advertisements received Friday will appear in the issue mailed the following Friday subject to space available.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

ASSISTANT AIRPORT Manager wanted: Mid-West Class 5 Airline Airport. Accounting background required. State training and experience in detail. Enclose photograph. Beginning salary $2400-$2800. Address replies to LFA, 7337 Churchill Ave., Detroit 6, Michigan.

CHIEF INDUSTRIAL Engineer—Supervision of industrial engineering group in layout and planning of plant facilities and flow of work, aircraft manufacture and assembly type plant. Time and production studies required, however not from wage incentive or structure viewpoint. Give details of experience and salary expected to P-5166, Aviation Week.

POSITION WANTED

AIRLINE FLIGHT Engineer and licensed A & E Mechanic. DC-3, 4-6 experience, 2000 logged hours. 8 yrs. airline experience. Interested in supervisory maintenance, service representation, technical assistant, other applicable situation. PW-5133, Aviation Week.

FOR SALE

Licensed TG 1-A
two place sailplane with instruments. Also trailer and tarpaulin. Ideal for club and individual use. Write: Purdue Glider Club, Purdue Memorial Union, W. Lafayette, Ind.

Navy Corsair
—modified for racing, NX 69900—placed in '46 Thompson Trophy Race, also a good Bendix threat, needs some work—$3500.00 or maybe trade—Cook Cleland, Airport, Willoughby, Ohio.

AERODYNAMICISTS
THERMODYNAMICISTS
STRESS ANALYSTS
AIRCRAFT DESIGNERS

North American Aviation has a number of excellent openings for engineers qualified in the fields listed. Salaries commensurate with training and experience. Please include complete summary of training and experience in reply.

Engineering Personnel Office

NORTH AMERICAN AVIATION, INC.

Municipal Airport

Los Angeles 45, California

STINSON VOYAGER 150

We have one of the finest used Stinson buys available. 150 HP Voyager, NC 97214, Maroon and Gray, exceptionally clean. Directional giro, G-E two-way radio, rate of climb, manifold pressure. 489 hours total; no time since 100-hour check. Flown only by meticulous, well-experienced private owner. 30-day warranty. $3250.

Atlantic Aviation Corporation
TETERBORO AIRPORT
TETERBORO, N. J.
PHONE: HASBROUCK HEIGHTS 8-1740

Rising Sun SCHOOL OF AERONAUTICS
ESTABLISHED 1930
"Built Upon the Success of Its Graduates"
GOVT. C.A.A. and VETERANS APPROVED
ENROLL NOW FOR NEXT CLASS
Write for Illustrated Catalog
2206-16 E. HUNTINGDON ST., PHILA., PA

WE SPECIALIZE
IN BUYING & SELLING used
TWIN ENGINE BEECHCRAFTS
Other makes available for sale
NEW YORK AVIATION CORP.
Aircraft brokers and appraisers
H. WARREN HOLLADAY, PRES.
5 W. 46th St., N.Y.C. LO. 3-6843

UNITED AIR LINES

• • •

new and used DC-3 and DC-4 parts, equipment and accessories at below cost!

For DC-3 airplane parts and accessories, and for P. & W. R-1830 parts, components and accessories, wire, write or phone:

R. B. Wade, Stores Dept., United Air Lines, Municipal Airport, Cheyenne, Wyoming. Telephone Cheyenne 8931.

For DC-4 airplane parts and accessories, and for P. & W. R-2000 parts, components and accessories, wire, write or phone:

C. D. Stowell, Stores Dept., United Air Lines Maintenance Base, Bayshore Highway, South San Francisco, California. Telephone Juno 8-2424.

Prompt delivery. Guaranteed to be as represented.

UNITED AIR LINES

For Sale FAIRCHILD 24KS

Factory corrosion-proofed; on wheels but with Edo 2880 floats, water rudder, anchor compartment, stainless steel cables and wires, auxiliary rudder and complete fairings. Forty hours on floats, 25 hrs. since factory major overhaul 165 Ranger engine; 200 hrs. since recovering wings, tail surfaces and complete overhaul of airframe and landing gear. New tires, deluxe Laidlaw and leather upholstery, complete flight instruments including Lear three band receiver and two channel transmitter, also Bendix loop and marker beacon. Ready to fly, no expense except license change and renewal.

COX & STEVENS AIRCRAFT CORP., MINEOLA, N. Y.

FOR SALE
BY
AMERICAN AIRLINES, INC.
43-02 Ditmars Blvd.
Astoria, L. I., New York

• • •

- Douglas DC-3 Airplane Parts, Accessories and Ground Equipment.
- Wright G-102 (C9GB) Engine Parts, Accessories and Components.
- P&W R-1830-92 Engine Parts, Accessories and Components.

• ALSO •

- Douglas DC-4 Airplane Parts, and Accessories.
- P&W R-2000-13 Engine Parts, Accessories and Components (many of which are interchangeable with R-2000-7-9-11 Engines).

These inventories are available for inspection at our warehouses at Astoria, L. I., New York, Tulsa, Oklahoma and Fort Worth, Texas and offered FOB these points for domestic shipment at very attractive prices.

PROMPT ATTENTION WILL BE GIVEN TO ALL REQUESTS FOR QUOTATIONS DIRECTED TO THE ATTENTION OF THE SUPERINTENDENT OF STORES AT THE ABOVE ADDRESS.

CONVERTED C-54B

Entire cabin area stripped and refinished in accordance with CAA specifications. Two lounges provided at right and left rear of cabin. Large buffet just forward of left-side lounge. Large coat area just forward of right-side lounge. Seats for 44 passengers. Storage for eight 7-main life rafts. Large cargo areas on both sides, forward of front cabin bulkhead. Collapsible bulkhead (same color scheme as main cabin and stowable in forward cargo compartments) can be used to provide extra cargo space. Cabin heaters modernized. Provisions for ground air conditioning.

- Power plant sections modernized. Low engine and propeller time since overhaul. Airframe time since overhaul—1200 to 1300 hours.
- Flap bus cable system; Wiley SA8 flare installation; fire warning and extinguisher systems meeting CAA specifications installed.
- Hydraulic system overhauled and all seals replaced. Integral fuel tanks reworked and resealed. Landing gear completely disassembled, inspected, repaired and otherwise overhauled. Fabric covered surfaces inspected and recovered as necessary.

Write for Full Information to:

THE GLENN L. MARTIN COMPANY
Commercial Sales Department
Baltimore 3, Maryland

SURPLUS HANGARS

New all-metal hangar buildings 147' x 162' packed for shipment complete with bolts and assembly instructions. This is military type clear span arch roof building and meets uniform building code. $30,000. each F.O.B. Los Angeles.

ANDERSON AIRCRAFT CO.
1700 Sawtelle Blvd.
Los Angeles, Cal.

FOR SALE

$25,000,000 P&W PARTS
$2,000,000 DC-3 PARTS
$1,000,000 PROPELLERS
$1,000,000 INSTRUMENTS
$1,000,000 O'HAUL TOOLS
$5,000,000 ACCESSORIES

PRICED BELOW GOV'T. COST

Prompt attention will be given to all requests for quotations. Mdse. located at our Glendale Whse.

AIA-PARTS INC.
723 SONORA AVE. GLENDALE 1, CALIF

GENERAL MAGNESIUM FOUNDRIES, INC.

612 South Third Street — Belleville, Illinois

MAGNESIUM CASTINGS
"AIRCRAFT SPECIALISTS"

U. S. A. F. CERTIFIED — HEAT TREAT FACILITIES

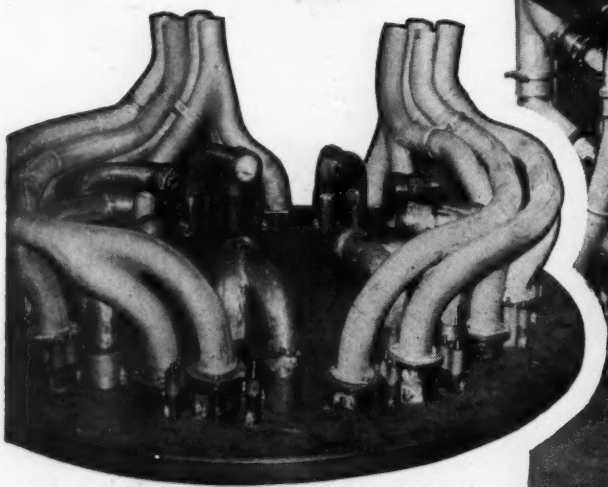
The Steward-Davis R-1830-92 Conversion is produced on the basis of the fact, and not the theory, that **no aircraft is better than its engine**

THIS FINE WARRANTED ENGINE, $1795 f.o.b. STEWARD-DAVIS, 1350 S. WESTERN, GARDENA, CALIF.

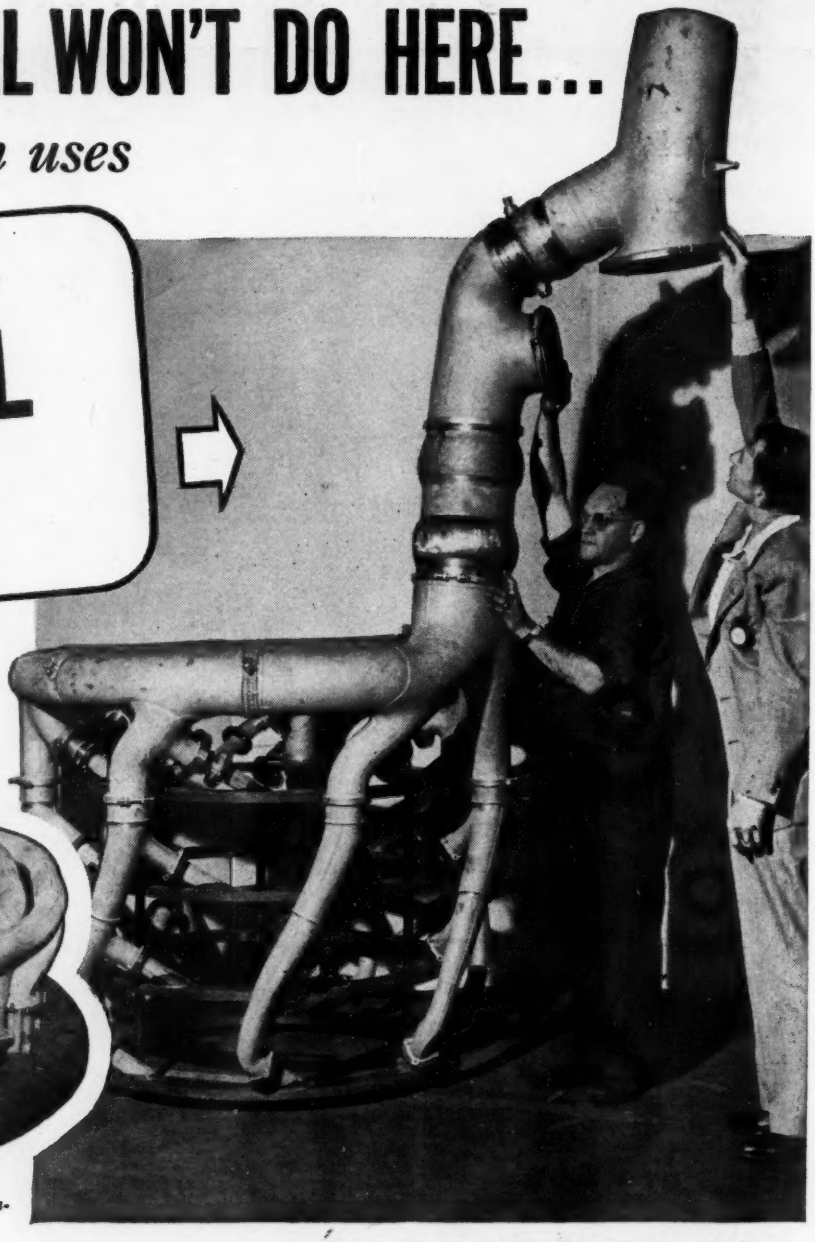
ORDINARY METAL WON'T DO HERE...

that's why Ryan uses

Chromium–
NICKEL
Stainless Steel



Exhaust system for Douglas DC-6 using 18-8 chromium-nickel stainless steel.



The Army's Boeing B-50 Super-Fortress Bombers are powered by engines equipped with Ryan exhaust systems like this one . . . made of 19-9 chromium-nickel stainless steel.

Strength . . . *at temperatures that would destroy ordinary metals* . . . even in the thin sections demanded of light weight structures.

Resistance to corroding action of hot exhaust gases . . . good drawing characteristics to permit forming into complicated shapes which can be readily joined by welding.

These are some of the reasons why austenitic chromium-nickel stainless steel is used in exhaust manifolds made by Ryan Aeronautical Company, San Diego, Calif., one of the world's largest producers of aircraft exhaust systems.

Investigate all the benefits stainless steels can give you. Leading steel companies produce stainless steel containing nickel in tubular, sheet and strip form. A list of sources of supply will be furnished on request.

EMBLEM OF INCO SERVICE
TRADE MARK

Over the years, International Nickel has accumulated a fund of useful information on the properties, treatment, fabrication and performance of engineering alloy steels, stainless steels, cast irons, brasses, bronzes, nickel silver, cupro-nickel and other alloys containing nickel. This information is yours for the asking. Write for "List A" of available publications.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

ADVERTISERS IN THIS ISSUE

AVIATION WEEK—JUNE 14, 1948

Aeroproducts Div. of G. M. C..... 22
Agency—Kircher, Helton & Collett Adv.

Aircraft Tools, Inc..... 40
Agency—Edward S. Kellogg Co.

Albertson & Co., Inc..... 36
Agency—E. W. Sann & Associates

Ambrose Aviation Co., Frank..... 53
Agency—Steedle, Rankin & Boyle, Inc.

Beech Aircraft Corp.....Fourth Cover
Agency—Erwin Wasey & Co., Inc.

B. G. Corporation, The.....Front Cover
Agency—Albert Frank Guenther Law, Inc.

Cities Service Oil Co..... 10
Agency—Ellington & Co., Inc.

Continental Motors Corp..... 48
Agency—Wallace Lindeman, Inc.

Dumont Aviation & Supply Co..... 30
Agency—Jordan & Lo Buono Adv.

Edison, Inc., Thomas A..... 53
Agency—The Schuyler Hopper Co.

Edo Corporation 8
Agency—Strohmeier Associates

Esso Standard Oil Co..... 21
Agency—McCann-Erickson, Inc.

General Controls Co..... 33
Agency—The McCarty Co.

General Electric Co..... 47
Agency—G. M. Basford Co.

Goodrich Co., The B. F..... 3
Agency—Batten, Barton, Durstine & Osborn, Inc.

Gordonay Products Co..... 49
Agency—Seeman & Peters, Inc.

Hollingshead Corp., R. M..... 31
Agency—The Aitkin-Kynett Co.

International Nickel Co., Inc., The..... 52
Agency—Marschalk & Pratt Co.

Lavelle Aircraft Corp..... 48
Agency—Broomfield-Podmore Adv.

McCauley Corp. 53
Agency—Hugo Wagenseil & Associates

Moulton Co., Inc., The..... 40
Agency—Jaycraft Co.

Nukraft Mfg. Co., Inc..... 25
Agency—William Hoffman & Associates

Phillips Petroleum Co..... 5
Agency—Lambert & Feasley Co.

Phillips Screw Manufacturers..... 9
Agency—Horton-Noyes Co.

Radio Corporation of America..... 6
Agency—J. Walter Thompson Co.

Scintilla Magneto Div. of Bendix Aviation Corp. 24
Agency—MacManus, John & Adams, Inc.

Searchlight Section 49, 50, 51

Sensenich Corporation 18
Agency—Foltz-Wessinger, Inc.

Sherwin-Williams Co., The..... 35
Agency—Newell-Emmett Co.

Sperry Gyroscope Co.....Third Cover
Agency—Charles Dallas Reach Co., Inc.

Thermo Electric Co..... 30
Agency—Fred Lange Associates, Inc.

Thompson Products, Inc.....Second Cover
Agency—The Griswold-Eshleman Co.

Titeflex, Inc. 4
Agency—Sykes Advertising, Inc.

Torngren Co., C. W..... 46
Agency—Tippett, Jackson & Nolan Adv.

U. S. Steel Corp.....28, 29
Agency—Batten, Barton, Durstine & Osborn, Inc.

PROFESSIONAL SERVICES—
See first issue of month.

▲

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT
Positions Vacant..... 49
Positions Wanted..... 49
SPECIAL SERVICES
Contract Work..... 50
EDUCATIONAL
Schools 49
PLANES—EQUIPMENT
(Used or Surplus New)
For Sale.....50-51

WORLD-WIDE distributors of multi-engine transport type aircraft, engines, their components and accessories. Agent for WAR ASSETS ADMINISTRATION. Write, wire or telephone your requirements.

EXPORTERS AIRCRAFT-ENGINES COMPONENTS

FRANK AMBROSE AVIATION COMPANY

34-17 Lawrence Street, Flushing, L. I., N. Y. . . . Cable Address: AIRAMBROSE
Branch Warehouse: Oakland Municipal Airport, Oakland, Calif.

Agents for Frank Ambrose Aviation (Canada) Ltd., Dorval Airport, Montreal, Canada and Frank Ambrose Aviation, S. A., Panama City, R. P.

Established 1923 *U. S. Export License No. 191*

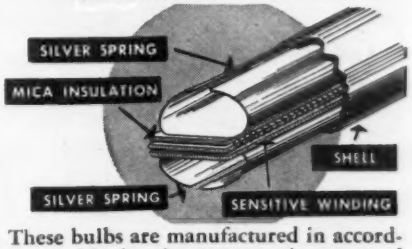
What Do You Look for in a THERMOMETER BULB?

Fast Response? Patented silver spring design of Edison Resistance Thermometer Bulbs provides maximum heat transfer and fast response. Time constant less than 2 seconds.

High Heat Range? Edison all-mica insulation, and metal-to-ceramic seal, permit operating temperatures up to 600° F.

Shock Protection? Silver springs inside Edison bulb stems cushion sensitive windings against shock.

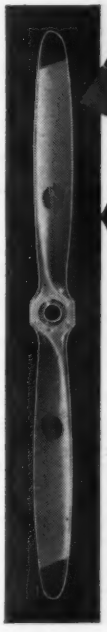
Prompt Delivery? Immediate delivery of Edison AN Thermometer Bulbs for replacement or new installations.



These bulbs are manufactured in accordance with the rigorous requirements of Army-Navy Specification AN-B-19. Descriptive bulletin and prices on request.

127 Lakeside Avenue • West Orange, New Jersey

INSTRUMENT DIVISION
THOMAS A. EDISON, Incorporated



MET-L-PROP

The WEATHER-PROOF Propeller FOR PERSONAL PLANES

• Wind, rain, snow or hail cannot damage or unbalance your Met-L-Prop. Made of forged heat-treated aluminum alloy, anodized for complete protection. It's durable, long-lasting—won't split or warp. CAA approved. You'll get *best* all-weather performance with Met-L-Prop.

MET-L-PROP FORGED STRENGTH McCAULEY CORPORATION

Without question Met-L-Prop is Best.

Now available for Stinson Voyagers, Cessna 170, Aeronca Sedan and planes powered with Continental 65 to 90 HP engines. Soon available for other planes up to 165 HP. Write today for free fact-full folder.

See Your Dealer or Distributor Now

McCAULEY CORPORATION
DAYTON 7, OHIO

EDITORIAL

Navy Blocks Supersonic Stories

It now develops that it is Defense Secretary Forrestal and the Navy who have been responsible recently for the hush-hush policy surrounding supersonic achievements of Air Force aircraft.

An editorial on this page last week urged Air Force Secretary Symington and Mr. Forrestal to let the press tell the American people about this major accomplishment of our aircraft industry and research agencies.

AVIATION WEEK in this issue reveals that the North American XF-86 has become the second USAF plane to fly faster than sound. Verification of this fact has been supplied this magazine by informed sources.

Last December AVIATION WEEK flouted censorship by reporting supersonic flights of the Bell XS-1 in October. The news was spreading rapidly throughout the military and commercial aviation world and it was our contention that to withhold stories of the success of the tests any longer was useless as far as national security was concerned.

It is now learned that the Air Force attempted without success recently to issue a press release acknowledging the truth of AVIATION WEEK's XS-1 story. This attempt was made immediately after the Attorney General on May 27 told a press conference that the Justice Department could not prosecute AVIATION WEEK for the XS-1 disclosures because the magazine had violated no federal law.

However, the Navy Department blocked the Air Force's statement, contending that an inter-service agreement, initiated by Forrestal last fall, still prevented any press announcements on supersonic flight by Air Force or Navy.

Nevertheless, it is understood that the Air Force again submitted its request to Mr. Forrestal and as this page was written the Navy was still dead set against the proposal. There was no indication whether the Defense Secretary would overrule or sustain the Navy.

In his Sunday night (June 6) broadcast over a national network, Columnist Walter Winchell called on United Press White House Correspondent Merriman Smith, then with the Presidential train in the west, to ask President Truman to confirm the fact that an American experimental jet plane, obviously the XS-1, had exceeded the speed of sound. There had been no comment from the President up to a few days ago, but the incident illustrated the growing public curiosity as pointed out on this page last week.

It is difficult to see how even Defense Secretary Forrestal and the Navy, as powerful as they are, can continue much longer to hoodwink the taxpayers who are footing our aviation research and procurement programs.

Could it be that they fear the favorable effect the news would have on a Congress already overwhelmingly air-minded?

Blow to GI Training

A fast political maneuver last week attached a rider to the Veterans Administration supplemental appropriations bill H. R. 6829, which menaces the GI flight training program.

The bill was pushed out on the House floor for a vote before the startled veterans who are taking flight courses and the schools who are giving them had time for effectual protest, according to Alexander McSurely, AVIATION WEEK's on-the-scene observer.

At press time, opposition to the rider in the form of telephone calls and telegrams to Congress was mounting rapidly but fate of GI flight training hung in the balance.

The rider proposed to give to Veteran's Administrator Carl Gray and his staff absolute authority to decide what veterans' training shall be considered "avocational or recreational" in character and cut off funds for any training which they so designated after July 1.

Veterans Administration personnel have criticized flight training repeatedly as "avocational and recreational" rather than as leading to jobs. James Webb, director of the Bureau of the Budget, attacked the flight training program in a statement to Congress in February, using statistics prepared by VA officials, and using similar words.

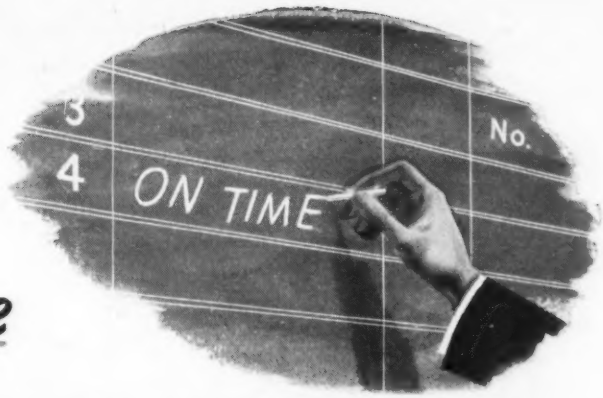
Washington aviation observers expect short shrift from VA for flight training if VA officials get the authority contained in this rider. They placed sole hopes for the bulk of flight training on whatever voting opposition to the arbitrary action could be raised on the floor in the vote which was due later last week.

Positions taken publicly and repeatedly by H. V. Stirling, Assistant Administrator, and A. H. Monk, director Training Facilities Service, indicate that if they get the chance they will use their new authority to scuttle peremptorily all GI flight training below the level of the instructor and commercial pilot, and may well make a clean sweep of the whole program.

At press time, it appeared that the sudden switch in tactics to cut off the appropriations had caught the aviation training industry short. Strategy of the flight training opponents, now unmasked at the last moment, appears to have been to set up a smokescreen in hearings in Rep. Edith Nourse Rogers' Veterans Affairs Committee, while the real attack was boring from within, in the appropriations subcommittee, without hearings or chance for countering evidence.

ROBERT H. WOOD

Airlines build payloads ...with Confidence



Confidence in airline operation pays off... in bigger payloads... bigger profits. Sperry helps airlines *build confidence* by supplying equipment that pays off, too . . . in greater schedule reliability . . . greater public confidence in commercial flying.

Sperry has developed, engineered and flight-tested instruments which will enable the airline to provide the kind of service that allows the passenger to fly comfortably and relaxed...safely, smoothly and on schedule regardless of weather or visibility.

Already on many airlines are to be found . . . the Sperry A-12 Gyropilot* for smooth, level flight . . . the Automatic Approach Control for guiding the aircraft to the runway in all kinds of weather . . . the Gyrosyn* Compass and other flight instruments for accurate information on position and direction . . . the Engine Analyzer to check engine performance during flight and to save valuable time on the ground.

These and other well-known Sperry products are designed to help the airline operator increase his load factor . . . and keep his fleet operating *economically* and *with profit.*

Meanwhile, Sperry research and engineering development keep forging ahead...improving old products, designing new ones.

*TRADEMARK REG. U. S. PAT. OFF.

SPERRY GYROSCOPE COMPANY

DIVISION OF THE SPERRY CORPORATION • GREAT NECK, N.Y.

NEW YORK • CLEVELAND • NEW ORLEANS • LOS ANGELES • SAN FRANCISCO • SEATTLE

Company-owned plane

Tom G. Dillingham
INSURANCE and BOND SERVICE
BASS BLDG. PHONE 4111
ENID, OKLAHOMA

MR. WALTER H. BEECH
BEECH AIRCRAFT CORPORATION
WICHITA, KANSAS

MARCH 1, 1948

DEAR SIR:

I THOUGHT YOU MIGHT BE INTERESTED IN THE WAY I AM PUTTING MY NEW BONANZA TO BUSINESSLIKE USE.

I HAVE ALREADY MADE SEVERAL LONG CROSS-COUNTRY TRIPS IN IT AND HAVE FLOWN IT OFF HIGH ALTITUDE FIELDS IN PRACTICALLY ALL WEATHER CONDITIONS. I AM MORE THAN PLEASED WITH ITS PERFORMANCE AND FLIGHT CHARACTERISTICS.

FOR SEVERAL YEARS I HAVE COVERED QUITE A TERRITORY IN THE SELLING OF INSURANCE AND ADJUSTMENT OF INSURANCE CLAIMS. I AM NOW COVERING ABOUT THREE TIMES THE TERRITORY I DID FORMERLY AND I AM NEVER AWAY FROM HOME OVERNIGHT. I USED TO BE GONE TEN DAYS OR TWO WEEKS AT A TIME. I FIND I CAN GET INTO ANY FIELD THAT ANY OTHER AIRPLANE CAN, AND IN SMALL TOWNS WHERE THEY HAVE NO FIELDS, I USE A SMALL PASTURE, ACCOMPLISH MY BUSINESS AND LEAVE WITHOUT ANY LOSS OF TIME.

I ALSO OPERATE RANCHES IN COLORADO AND NEW MEXICO AND USE THE PLANE TO COMMUTE BETWEEN THEM, MAKING THE TRIP EACH WAY IN ABOUT TWO HOURS WHEREAS IT TAKES TEN OR TWELVE HOURS OF HARD DRIVING IN AN AUTOMOBILE.

THE BONANZA IS CERTAINLY MY IDEA OF EFFICIENT TRANSPORTATION, AND IT IS ONE OF THE BEST BUSINESS INVESTMENTS I HAVE MADE FOR A LONG WHILE. IT IS SO FAST AND ECONOMICAL THAT IT ACTUALLY PAYS ME A PROFIT ON ITS OPERATION.

YOURS VERY TRULY,
Tom G. Dillingham
TOM G. DILLINGHAM

INSUROR
NATIONAL ASSOCIATION OF INSURANCE AGENTS

The 4-place Bonanza has boosters like Tom Dillingham in practically every field of business. They'll echo his statement that it's an investment that *pays!* The Bonanza operates at a cost as low as 1¢ per passenger mile.

At the airport, talk with any Bonanza owner. You'll know him by that proud, almost parentlike gleam in his eye! Ask him about the remarkable quietness of the cabin, and its economy, and all the claims that have been made for the revolutionary new Beechcraft Bonanza.

● A note on your company letterhead will bring an informative brochure on "The Air Fleet of American Business". Write today to Beech Aircraft Corporation, Wichita, Kansas, U.S.A.

BEECHCRAFT
BONANZA
MODEL 35

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS